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August 10, 2019

Ms. Pamela Innis U.S. Department of the Interior CHF Remedial Project Manager One North Central Avenue, Suite 800 Phoenix, AZ 85004-4427

Mr. Aaron Yue California Department of Toxic Substances Control 5796 Corporate Avenue Cypress, CA 90630

Subject: July 2019 Monthly Progress Report for the Final Groundwater Remedy Construction and

Startup, PG&E Topock Compressor Station, Needles, California

(Document ID: TPK\_Monthly\_Progress\_Rpt\_July\_2019\_20190810\_Final)

Dear Ms. Innis and Mr. Yue:

In compliance with the 1996 Corrective Action Consent Agreement (CACA) (Attachment 6, Part E, Section 9a and Attachment 7) and the 2013 Remedial Design/Remedial Action Consent Decree (CD) (¶32 and Appendix C, Section 5), and pursuant to the Construction/ Remedial Action Work Plan (C/RAWP) (Section 2.6.3.1), this monthly report describes activities taken at Pacific Gas and Electric Company's (PG&E's) Topock Compressor Station during July 2019 as well as activities planned for the next six weeks (August 4 through September 14, 2019), and presents available results from sampling and testing performed in July 2019.

In addition, this report discusses material deviations from the approved design documents and/or the C/RAWP, if any, that PG&E has proposed to the California Department of Toxic Substances Control (DTSC) and the U.S. Department of the Interior (DOI), or that have been approved by DTSC and DOI. This report also highlights key personnel changes, if any, and summarizes activities performed and activities planned in support of DOI's 2012 Community Involvement Plan and DTSC's 2019 Community Outreach Plan, as well as contacts with the local community, representatives of the press, and/or public interest groups, if any. This report also includes data from samples collected as part of the sitewide groundwater monitoring program within 60 days of sample collection, as required by the Condition of Approval # xi in DTSC's approval letter dated August 24, 2018.

Please note that since activities conducted to comply with the project's Applicable or Relevant and Appropriate Requirement (ARARs) and the Subsequent Environmental Impact Report (SEIR) mitigation measures are currently reported in separate compliance reports, this information is not repeated in the monthly reports.

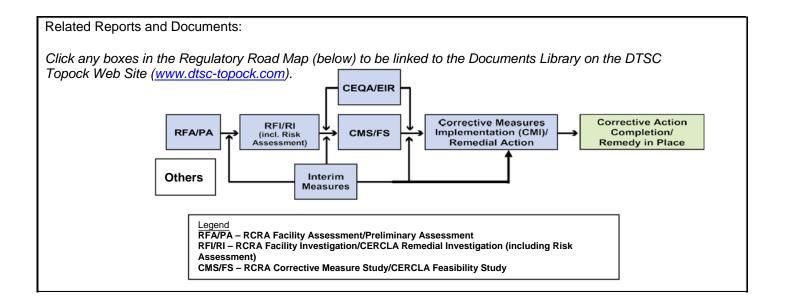
Monthly progress reports will be submitted to DTSC and DOI by the 10<sup>th</sup> day of the following month during construction and start-up of the groundwater remedy at the Topock Compressor Station which officially began on October 2, 2018. This is the tenth monthly progress report. Please contact me at (760) 791-5884 if you have any questions or comments regarding this submittal.

Sincerely,

Curt Russell

Topock Project Manager

Topock Project	Executive Abstract
Document Title: July 2019 Monthly Progress Report for the Groundwater Remedy Construction and Startup, PG&E Topock Compressor Station, Needles, California Submitting Agency: DOI, DTSC Final Document?	Date of Document: 8/10/2019 Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other) PG&E
Priority Status: ☐ HIGH ☐ MED ☐ LOW	Action Required:
Is this time critical? ☐ Yes ☑ No	☐ Information Only ☐ Review & Input
Type of Document:  ☐ Draft ☐ Report ☐ Letter ☐ Memo ☐ Other / Explain:	□ Other / Explain:
What does this information pertain to?	Is this a Regulatory Requirement?
<ul> <li>□ Resource Conservation and Recovery Act         (RCRA) Facility Assessment (RFA)/Preliminary         Assessment (PA)</li> <li>□ RCRA Facility Investigation (RFI)/Remedial</li> </ul>	
Investigation (RI) (including Risk Assessment)  Corrective Measures Study (CMS)/Feasibility Study (FS)	
<ul> <li>☑ Corrective Measures Implementation (CMI)/ Remedial Action(RA)</li> </ul>	
☐ California Environmental Quality Act (CEQA)/ Environmental Impact Report (EIR)	
☐ Interim Measures	
☐ Other / Explain:	
What is the consequence of NOT doing this item? What is the consequence of DOING this item?  The consequence for not doing this item is PG&E will be out of compliance with the 1996 Corrective Action Consent Agreement (CACA) and the 2013 Remedial Design/ Remedial Action Consent Decree (CD), as well as the Construction/Remedial Action Work Plan (C/RAWP).	Other Justification/s:  ☐ Permit ☐ Other / Explain:
Brief Summary of attached document:	
This monthly report describes activities taken during July 2019 and September 14, 2019) and presents available results from sampling material deviations from the approved design documents and/or th that PG&E has proposed to the California Department of Toxic Sub (DOI) or that have been approved by DTSC and DOI. This report a activities performed and activities planned at the Topock Compress Plan and DTSC's 2019 Community Outreach Plan, as well as cont public interest groups, if any.	g and testing in July 2019. In addition, this report discusses the Construction/ Remedial Action Work Plan (C/RAWP), if any, postances Control (DTSC) and the U.S. Department of the Interioralso highlights key personnel changes, if any, and summarizes sor Station in support of DOI's 2012 Community Involvement
Written by: Pacific Gas and Electric Company	
Recommendations:	
Provide input to PG&E.	
How is this information related to the Final Remedy or Regulatory Final This submittal is required in compliance with the CACA, CD, and proceed the compliance with the cache, compliance with	-
Other requirements of this information? None.	





# July 2019 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup

PG&E Topock Compressor Station Needles, California

Document ID: TPK\_Monthly\_Progress\_Rpt\_June\_20190810\_Final

August 2019

Prepared for U.S. Department of the Interior and California Department of Toxic Substances Control

On Behalf of Pacific Gas and Electric Company





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Acronyms and Abbreviations .....ix

AX0206192356BAO VII

Validated Groundwater Monitoring Data (DTSC Condition of Approval xi)



# **Acronyms and Abbreviations**

μg/m<sup>3</sup> micrograms per cubic meter

AOC Area of Concern

APE Area of Potential Effect

ARAR applicable or relevant and appropriate requirement

bgs below ground surface

BLM U.S. Bureau of Land Management

BMP best management practice

CACA Corrective Action Consent Agreement

C/RAWP Construction/Remedial Action Work Plan

CD Consent Decree

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

CH2M CH2M HILL, Inc.

CHQ Construction Headquarters

DOI United States Department of the Interior

DTSC California Department of Toxic Substances Control

ERTC Environmental Release to Construct

FCR field contact representative

LOC level of concern

NTH National Trails Highway

PBA Programmatic Biological Agreement
PG&E Pacific Gas and Electric Company

RCRA Resource Conservation and Recovery Act
SEIR Subsequent Environmental Impact Report

SPY Soil Processing Yard

SWPPP Stormwater Pollution Prevention Plan

TCS Topock Compressor Station
TRC Technical Review Committee

USEPA U.S. Environmental Protection Agency

USFWS U.S. Fish and Wildlife Service

WEAT Worker Environmental Awareness Training

WVR Work Variance Request



### 1. Introduction

Pacific Gas and Electric Company (PG&E) is implementing the final groundwater remedy to address chromium in groundwater near the PG&E Topock Compressor Station (TCS), located in eastern San Bernardino County 15 miles southeast of the city of Needles, California.

The U.S. Department of the Interior (DOI) is the lead federal agency overseeing remedial actions at the TCS. PG&E and the United States executed a Remedial Design/Remedial Action Consent Decree (CD), on behalf of the DOI, under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in 2012, which was approved by the U.S. District Court for the Central District of California in November 2013 (DOI, 2013). Paragraph 32 and Appendix C (Section 5) of the CD requires PG&E to submit to DOI electronic progress reports during construction of the remedial action and on a quarterly basis after the selected remedy has been implemented and demonstrated to be operating as intended.

The California Department of Toxic Substances Control (DTSC) is the lead state agency overseeing corrective actions at the TCS. Remedial activities are being performed in conformance with the requirements of the Resource Conservation and Recovery Act (RCRA) Corrective Action pursuant to a Corrective Action Consent Agreement (CACA) entered into by PG&E and the DTSC in February 1996 (DTSC, 1996). Attachment 6, Part E, Section 9a and Attachment 7 of the CACA require PG&E to provide certain information in monthly progress reports during construction of the corrective action.

In compliance with the above CACA and CD requirements, PG&E proposed a template for the monthly progress reports in Exhibit 2.6-2 of the Construction/Remedial Action Work Plan (C/RAWP) (CH2M HILL, Inc. [CH2M], 2015b). The C/RAWP was approved by DOI on April 3, 2018 (DOI, 2018) and DTSC on April 24, 2018 (DTSC, 2018a).

This is the tenth of the monthly progress reports that will be submitted to DOI and DOI for the duration of the remedy construction and startup. This monthly progress report documents activities during July 2019, and follows the content and format described in Exhibit 2.6-2 of the approved C/RAWP. The report is organized as follows:

- Section 2.1 describes completed construction activities; data collected, generated or received; nature
  and volume of waste generated; waste handling/disposal; issues encountered; actions taken to rectify
  problems/issues; personnel changes; and Work Variance Requests (WVRs; i.e., material deviations
  from the design documents, the C/RAWP, or other approved work plans), if any, as well as agencies'
  actions on those requests, and potential schedule impacts.
- Section 2.2 summarizes contacts with representatives of the press, local community, or public interest groups during the reporting period, other activities provided to assist DTSC and/or DOI in support of the Community Outreach Plan (DTSC, 2019) and/or Community Involvement Plan (DOI, 2012), respectively, and anticipated near-term (approximately next six weeks) activities in support of the Community Outreach and Community Involvement Plans.
- Section 2.3 describes the planned activities for the next six weeks (construction activities, sampling and monitoring events, etc.).
- **Section 2.4** provides information relating to the construction schedule progress, sequencing of activities, information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule, and a description of efforts made to mitigate those delays or anticipated delays, if any.
- Section 3 lists the references cited in this report.

Please note that since activities conducted to comply with the project's Applicable or Relevant and Appropriate Requirement (ARARs) and the Subsequent Environmental Impact Report (SEIR; DTSC, 2018b) mitigation measures are currently reported in separate compliance reports, the same information is not repeated in the monthly reports.



# 2. Monthly Update

#### 2.1 Description of Activities and Work Completed

#### 2.1.1 Work Completed

Highlights of key activities related to the construction of the groundwater remedy completed during June 2019 include the following (in chronological order):

- On July 13, 2018, PG&E sent via email the first weekly six-week look-ahead schedule for the remedy construction field work. The weekly emails provide highlights of field activities in the previous week, field activities scheduled for the next week, and planned activities for the next six weeks. Recipients of the weekly emails are DOI, DTSC, the U.S. Fish and Wildlife Service (USFWS), Tribes, and the Technical Review Committee (TRC). PG&E continues to send these weekly emails to date. As of July 31, 2019, a total of 55 six-week look-ahead schedule emails have been sent. Of those, four six-week look-ahead schedule emails were sent in July 2019 (on July 7, 14, 21, and 27, 2019).
- On August 10, 2018, PG&E issued the first Environmental Release to Construct (ERTC) to contractors. As of July 31, 2019, a total of 47 ERTCs were issued for mobilization and construction activities (see Table 2-1). Of those, one ERTC was issued in July 2019.
- Starting on October 4, 2018, PG&E has published a daily construction activities list and discussed the
  list at the morning tailboards with Tribes and agency representatives. This daily list is intended to
  inform and facilitate observation by Tribes and agency representatives on site on that day. PG&E
  continues to publish these daily lists and discuss the list at the daily morning tailboards to date. In
  July 2019, a total of 26 daily construction activities lists were published and discussed at the
  morning tailboards.
- In July 2019, PG&E completed the following construction activities (see Figures 2-1 and 2-2 for locations of key areas and wells, as well as select photos in **Attachment A**):

#### - Non-Well Construction Activities:

- a) Substantially completed Pipeline C Segments C3, C4, C5 in the floodplain.
- b) Substantially completed the aggregate base road north of the BNSF bridge.
- c) Completed the Construction Headquarters (CHQ).
- d) Prepared for the installation of remedy pipelines B and J (e.g., moved sand from the floodplain to staging areas along the pipeline alignment).

#### Pilot Boring/Well Installation Activities (Rotosonic drilling):

- a) Complete pilot boring at RB-2, RB-3, and RB-4, and backfilled with sand.
- b) Completed development at MW-B, MW-O, and MW-R.
- c) Completed well head installation at MW-O, MW-10D, and MW-R.

#### Remedy Well Installation Activities (Dual Rotary drilling):

- a) Completed remedy well installation at RB-5.
- b) Completed specific capacity test at IRZ-20.
- c) Conducted well development at IRZ-21 and IRZ-23.
- d) See **Attachment B** for available information such as boring logs, water analytical results, and well testing activities. In addition, PG&E has summarized and presented PG&E's observation of the aquifer data collected to date at the April 3, 2019 Consultative Work Group (CWG) meeting and the August 7, 2019 Technical Work Group (TWG) meeting.

#### Baseline/Opportunistic Soil Sampling Activities:



- Pursuant to the Baseline Soil Sampling and Analysis Plan (Appendix A of the Soil Management Plan [which is Appendix L of the C/RAWP]), one soil sample was collected at approximately 1 foot below ground surface (bgs) at IRZ-19 (sampled on July 24, 2019).
- See Attachment C for information about soil sampling locations and soil analytical results that are available at this time. There are no new soil data in July 2019.

#### Perimeter Air Sampling Activities:

- a) Dust monitoring/observation was conducted through July 31, 2019 at the perimeter of select work areas.
- b) Perimeter air sampling for hexavalent chromium is performed at the perimeter of the work areas (outside of the exclusion zone) that are inside or within 20 feet of Areas of Concern (AOCs) and within the construction footprint where hexavalent chromium concentrations in soil have been historically reported. No air sampling event occurred in July 2019.
- See Attachment D for information about previous air sampling locations and air analytical results.

#### Noise Monitoring Activities:

- a) Noise monitoring is conducted at pre-approved locations closest to the construction activities. Through July 31, 2019, noise monitoring was conducted at the following pre-approved locations:
  - Location west of the mobile home park at Moabi Regional Park,
  - Location Maze B Combined Area 1/2,
  - Location Maze C Area 1, and
  - Location mobile home park at Topock Marina.
- b) See **Attachment E** for information about pre-approved noise monitoring locations and a summary of noise monitoring data available to date.

#### 2.1.2 Work Already Underway and During Implementation

As of July 31, 2019, PG&E has started and will continue to perform the following activities:

- Continue to drill and install well at MW-C, MW-X, and MW-H.
- Continue to install remedy well at RB-4 (dual rotary rig).
- Plan for the abandonment of well MW-B-167 and drilling of a replacement well.
- Start the installation of Pipeline B.
- Repair a portion of the access matting under the BNSF bridge.
- Continue to plan for the installation of Pipeline C6 on the MW-20 Bench.
- Continue to install temporary service water and wastewater pipelines for dual rotary drilling at RB well locations.
- Continue to conduct noise and dust monitoring and inspection of Stormwater Pollution Prevention Plan (SWPPP) Best Management Practices (BMPs).
- Continue to track and manage waste generated.
- Continue to manage displaced soil per the approved Soil Management Plan (Appendix L of the C/RAWP).



#### 2.1.3 Freshwater Usage, Waste Generation and Management

As of July 31, 2019, the volumes of freshwater used for remedy construction and waste streams generated from remedy construction (starting on October 2, 2018) are as follows:

#### Freshwater Usage and Wastewater Management

- An approximate total of 2,804,050 gallons (8.6 acre-feet) of freshwater was used, of which an
  approximate 9.2 percent was for pilot boring/well installation and general construction, 1.1 percent for
  hydrostatic testing of pipeline, and 89.7 percent was for fugitive dust suppression. Of this amount,
  568,500 gallons of freshwater was used in July 2019.
- An approximate total of 45,600 gallons of hydrostatic testing water was discharged to land. Of this
  amount, 44,500 gallons were discharged in May 2019 and 1,100 gallons were discharged in June
  2019. No discharge to land occurred in July 2019. All discharges to land comply with the substantive
  requirements of State Water Resources Control Board (SWRCB) Water Quality Order 2003-0003DWQ. See Attachment F for approximate volume at each approved discharge location and date of
  each discharge.
- An approximate total of 174,227 gallons of wastewater generated from drilling operations were discharged to Compressor Station evaporation pond #4. In July 2019, 49,281 gallons of wastewater was discharged to pond #4. The discharge complies with the Waste Discharge Requirements (WDRs) of the California Regional Water Quality Control Board (CRWQCB), Colorado River Basin Region, Order No. R7-2018-0022.

At each sonic drilling location, the wastewater is initially stored in a holding tank in the primary work zone, and is transferred from the primary work zone, as needed, to 20,000-gallon frac tanks located at the MW-20 Bench. Each transfer load is tracked. At each dual rotary drilling location, freshwater and wastewater are conveyed between the frac tanks and the drilling location via pipes. Once a frac tank is full, its contents is characterized and managed in accordance with the approved Waste Management Plan (Appendix R of the C/RAWP).

#### **Displaced Materials/Soils/Clay**

- Approximately 313.3 cubic yards of drill cuttings were generated from well drilling and geotechnical
  investigation. Of those, approximately 1.3 cubic yards are clay from Pipeline F geotechnical
  investigation (using hollow stem auger). Drill cuttings are typically stored in roll-off bins with closed
  tops. Samples are collected from the bins for characterization and analyzed in accordance with the
  Soil Management Plan.
  - The clay collected from the Pipeline F geotechnical investigation is stockpiled at the SPY, separate from the other clean soil, in accordance with the revised clay handling protocol in Addendum to the Soil Management Plan (dated May 28, 2019).
- During sonic drilling of MW-O, fat clay with sand (CH) was encountered at 26.8 to 27.8 feet below ground. The clay material retrieved from drill cores was put in a zip lock bag and characterized in accordance with the Soil Management Plan. The clay material was provided to the Tribes at their request on August 7, 2019.
- Approximately 40 cubic yards of displaced soil was generated from the potholing activities along remedy pipeline alignments to pre-characterize soil in preparation for pipeline installation. Samples were collected for characterization in accordance with the Soil Management Plan. These soils are currently stored in bins at the SPY. A decision on the final disposition of these soils is forthcoming
- Approximately 100 cubic yards of displaced soil was generated from excavation for the brine tanks
  containment upgrade at the MW-20 Bench. Samples were collected for characterization and analyzed
  in accordance with the Soil Management Plan. This soil is currently stockpiled on a plastic liner at the
  SPY. A decision on the final disposition of this soil is forthcoming.

#### **General Construction Waste, Sanitary Waste, and Recyclables**



- In July 2019, approximately 90 cubic yards of general construction waste and 5.7 tons of green waste/construction debris (e.g., concrete from wash outs) were generated and transported to Republic Services in Lake Havasu City for disposal and management.
- Sanitary waste from construction trailers/portable toilets is hauled offsite as needed.

#### 2.1.4 Worker Training and Education

- PG&E continues to provide the mandatory Site Health and Safety Training for its employees and
  contractors on a daily basis. As of July 31, 2019, a total of 97 health and safety training sessions
  were held and 337 employees and contractors received the training. Of those, in July 2019, eleven
  sessions were conducted and 20 employees/contractors were trained. After the training, the
  attendees signed the training roster.
- PG&E continues to provide the mandatory Worker Environmental Awareness Training (WEAT) to its employees and contractors that will be involved in the remedy construction project. The training is offered regularly on Mondays and Thursdays, and more frequently as needed. As of July 31, 2019, a total of 99 WEAT sessions were conducted and 382 employees and contractors received the training. Of those, in July 2019, 8 sessions were conducted (on 7/9, 7/11, 7/15 (twice), 7/18, 7/23, 7/25, 7/31) and 19 employees/contractors were trained. Educational brochures are made available to attendees of the training; they are designed to reinforce the key topics and highlight the take-aways discussed during the classroom training. After the training, the attendees signed the WEAT completion form.
- PG&E's onsite biologist also trained Field Contact Representatives (FCRs), who will be responsible
  for compliance with biological avoidance and mitigation measures. As of July 31, 2019, a total of 10
  FCR training sessions were conducted and 54 employees and contractors received the training. No
  FCR training was conducted in July 2019.
- Training records are kept electronically and at the temporary construction trailers at the SPY. The
  records are available upon request.

#### 2.1.5 Status of Work Variance Requests (WVRs)

PG&E did not propose any new work variance in July 2019. See Table 2-2 for information regarding activities related to previously proposed WVRs (i.e., material deviations from the design documents, the C/RAWP, or other approved work plans), and agencies' actions on those requests.

#### 2.1.6 Use of Future Activity Allowance

There was no proposed use of Future Activity Allowance (FAA) to date.

#### 2.1.7 Issues Encountered and Actions Taken to Rectify Issues/Problems

- On May 31, 2019, PG&E conducted a video log of the well casings in the deep well cluster at MW-B (MW-B-267 and MW-B-337). Results for the video log indicate that solid materials were encountered in both casings, with approximately 70 to 78 feet of materials. There were no direct observations of a crack in either of the casings. On June 25-26, 2019, PG&E developed the deep well MW-B-337 and bailed out the solids; the development was successful (reduce turbidity to approximately 10 NTU) and the solid materials appear to be silt and fine sand. A video log was performed of the cleaned out well; there was no evidence of damage to the screen or casing. PG&E will discuss and propose options for abandonment of the shallower and damaged well MW-B-267, with the agencies. In addition, PG&E will also discuss replacement of MW-B-267 with the agencies.
- A portion of a tremie pipe was lost in the casing during installation of MW-R. The crew tried to thread
  back on to the piece but were unsuccessful. It is believed that there was damage to the threads of
  that piece, which is why it was lost and could not be retrieved. The crew have been directed to
  inspect the joints of each section of tremie pipe when they are installing it to prevent this from
  happening again. MW-R will be developed and sampled using narrow (1-inch) tool.



- PG&E continues to work with Transwestern to resolve the conflict between their gas pipeline and the portion of Pipeline F, just outside of the Transwestern Bench.
- PG&E continues to work with Frontier to resolve the conflict between their telecom line and Pipeline C segments C13, C15, and C16, in the shoulder of NTH.
- PG&E continues to work with Kinder Morgan to resolve the conflict between their gas pipeline and Pipeline C segment C17, north of the Transwestern Bench.
- PG&E is working with potential subcontractors on the details of an installation plan for the jack-andbore under NTH.
- Cascade indicated that the space available for the dual rotary rig to install remedy well IRZ-27 (along NTH) is not adequate. PG&E is evaluating different rig set up configurations to minimize the work space while allowing Cascade to safely drill at this location.
- PG&E is evaluating the location of IRZ-19 in proximity to the current alignment of Pipeline C,
   Segment C6 (transition from the floodplain to the MW-20 Bench), to minimize the work area for the dual rotary rig at this location.

#### 2.1.8 Key Personnel Changes

There was no change to key PG&E project personnel in July 2019.

#### 2.2 Communication with the Public

PG&E did not have any key communications with the public in July 2019:

#### 2.3 Planned Activities for Next Six Weeks

The planned activities for next six weeks (August 4 through September 14, 2019) include the following:

- Well installation activities:
  - Complete installation of wells MW-C, MW-D, MW-H, MW-X, RB-3, and RB-4.
  - Complete drilling of pilot boring at IRZ-19.
  - Start drilling well RB-2, MW-Y', and MW-S.
  - Conduct well testing at IRZ-23 and IRZ-21.
  - Continue well testing at IRZ-20.
  - Complete well development at MW-B, MW-C, and RB-5.
  - Drilling of pilot boring at IRZ-37 did not occur as previously forecasted due to the availability of spider rig. This activity will be added to a six-week look ahead schedule when rig availability is known.
- Non-well construction activities:
  - Continue to install Pipeline B and J.
  - Start installation of Pipeline C Segment C6.
  - Continue to conduct noise and dust monitoring and inspection of SWPPP BMPs.
  - Continue to log and manage waste generated.
  - Continue to manage displaced soil per the approved Soil Management Plan.

Attachment G contains the six-week look-ahead schedule available at this time. Any adjustments to the schedule will occur as needed via the weekly emails (sent at the end of each week) and/or the daily list of



construction activities (published daily and discussed with agency and Tribal representatives on site on that day).

#### 2.4 Construction Schedule Review

Phase 1 of the groundwater remedy construction started on October 2, 2018. Table 2-3 presents a summary of the percent completeness for key construction activities as of July 31, 2019. An update to Phase 1 construction schedule will be presented in the next monthly progress report.

# 2.5 Available Sitewide Groundwater Monitoring Data (DTSC Condition of Approval xi)

Pursuant to Condition of Approval # xi in DTSC's approval letter dated August 24, 2018 (DTSC, 2018a), PG&E is required to report data from samples collected as part of the sitewide groundwater monitoring program within 60 days of sample collection. In compliance with this requirement, PG&E submitted validated data to DTSC via monthly emails. For ease of recordkeeping and to minimize the number of adhoc compliance reports/emails, PG&E has included validated data in each monthly progress report starting with the November 2018 report (see **Attachment H**).

#### 3. References

California Department of Toxic Substances Control (DTSC). 1996. Corrective Action Consent Agreement (Revised), Pacific Gas and Electric Company's Topock Compressor Station, Needles, California. EPA ID No. CAT080011729. February 2.

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California Department of Toxic Substances Control (DTSC). 2018a. Acceptance and Conditional Approval of Groundwater Remedy Design and Corrective Measures Implementation Workplan at Pacific Gas and Electric Company, Topock Compressor Station, Needles, California. April 24.

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#### Table 2-1 Summary of Environmental Release-To-Constructions (ERTCs) Issued to Contractors

July 2019 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup PG&E Topock Compressor Station, Needles, California

ERTC No.	Brief Description of Covered Areas and Scope of Authorized Activities	Issue Date					
Non-Well ERT	Non-Well ERTCs						
1	Initial mobilization activities at the Construction Headquarters (CHQ), Soil Processing Yard (SPY), and three staging areas (#9 Parking area off I-40, #18 MW-20 Bench, and #23 Transwestern Bench). Scope included installation of temporary construction trailers, portable generators, SWPPP BMPs, construction signages, and temporary construction fencing, as well as equipment staging and truck inspections.	August 10, 2018					
Addendum 1 to ERTC #1	Scope included setup of wastewater and freshwater storage tanks at MW-20 Bench, improvement of the access road at the CHQ, installation of perimeter fence at the SPY, and grading at SPY.	September 21, 2018					
Addendum 2 to ERTC #1	Scope included grading for drill rig setup at IRZ-20.	October 4, 2018					
Addendum 3 to ERTC #1	Scope included geotechnical investigation in the footprint of the future Carbon Amendment building at the MW-20 Bench.	October 9, 2018					
Addendum 4 to ERTC #1	Scope included the installation of a temporary handrail along the walkway from the MW-20 Bench to the floodplain.	December 28, 2018					
2	Scope included the installation of the temporary construction water system and construction water tanks at Area #25 Route 66 Welcome Sign.	September 28, 2018					
3	Scope included the installation of the Public Information Trailer, a fugitive dust sign, an information kiosk, and a construction delivery sign at the northwest corner of Park Moabi Road and National Trails Highway (NTH).	September 4, 2018					
4	Scope included the installation of a truck containment pad at the TCS evaporation ponds and maintenance of the access road to the ponds.	September 24, 2018					
6	Scope included the geotechnical investigation along Pipeline F alignment (on the Compressor Station entrance road).	October 3, 2018					
7	Scope included the installation of traffic control along the southern end of NTH per the Traffic Control Plan.	September 17, 2018					
9	Scope included the transplantation and planting of sensitive plants.	November 9, 2018					
10	Scope included potholing activities along approved pipeline alignments and in building footprints, that are also in AOCs/SMWUs. The purpose is to pre-characterize soil in preparation for construction.	March 29, 2019					
11	Scope included preparation of temporary staging areas, vegetation clearance, placement of stabilization mats, potholing in select locations, and installation of Pipeline C segments C1 through C6 in the floodplain.	January 3, 2019					
11a	Scope included preparation of temporary staging areas, vegetation clearance, placement of stabilization mats, potholing in select locations, and installation of Pipeline C segments C7-C10, and C17 in the floodplain.	February 11, 2019					
11b	Scope included installation of Pipelines B, F, and J.	May 31, 2019					
12	Scope included non-intrusive site preparation work for the brine tanks containment upgrade on the MW-20 Bench (per Work Variance Request #1, see Table 2-2). A forthcoming addendum to this ERTC will be issued to include the actual upgrade activities.	January 10, 2019					
12a	Scope included the actual brine tanks containment upgrade activities which include intrusive work on the MW-20 Bench (per Work Variance Request #1, see Table 2-2).	February 6, 2019					
Well ERTCs							
5a	Scope included the site setup, drilling, testing, and demobilization at MW-L.	September 27, 2018					
5b	Scope included the placement of soil stabilization mats in the floodplain, setup of a temporary staging area near the north end of the access route in the floodplain, rig setup, installation of snow fence to protect plants, drilling, testing, and demobilization at IRZ-15.	October 12, 2018					
5c	Scope included the site setup, drilling, testing, and demobilization at IRZ-20 on the MW-20 Bench.	October 15, 2018					

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#### Table 2-1 Summary of Environmental Release-To-Constructions (ERTCs) Issued to Contractors

July 2019 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup PG&E Topock Compressor Station, Needles, California

ERTC No.	Brief Description of Covered Areas and Scope of Authorized Activities	Issue Date
5d	Scope included the site setup, drilling, testing, and demobilization at MW-E on the MW-20 Bench.	October 29, 2018
5e	Scope included the site setup, drilling, testing, and demobilization at MW-N in the upland.	November 15, 2018
5f	Scope included the site setup, drilling, testing, and demobilization at IRZ-13 in the floodplain.	November 7, 2018
5g	Scope included the site setup, drilling, testing, and demobilization at IRZ-23 on the MW-20 Bench.	November 8, 2018
5h	Scope included the site setup, drilling, testing, and demobilization at MW-M in the upland.	January 15, 2019
5i	Scope included the site setup, drilling, testing, and demobilization at IRZ-9 in the floodplain.	November 28, 2018
5j	Scope included the site setup, drilling, testing, and demobilization at IRZ-25 on the MW-20 Bench.	December 3, 2018
5k	Scope included the site setup, drilling, testing, and demobilization at IRZ-21 on the MW-20 Bench.	December 9, 2018
51	Scope included the site setup, drilling, testing, and demobilization at MW-B in the floodplain.	December 10, 2018
Addendum to ERTC #5I	Scope included the setup of an additional temporary equipment and material staging area in the floodplain.	December 13, 2018
5m	Scope included the site setup, drilling, testing, and demobilization at MW-F along NTH.	December 17, 2018
5n	Scope included the site setup, drilling, testing, and demobilization at IRZ-11 in the floodplain.	December 17, 2018
50	Scope included the site setup, drilling, testing, and demobilization at MW-X and MW-Y' in Arizona.	April 23, 2019
5p	Scope included the site setup, drilling, testing, and demobilization at MW-G along NTH.	January 14, 2019
5q	Scope included the site setup, drilling, testing, and demobilization at IRZ-16 and IRZ-17 in the floodplain.	February 14, 2019
5r	Scope included the site setup, drilling, testing, and demobilization at IRZ-27 and IRZ-29 along NTH. Also included in the scope are potholing activities along Pipeline C Segments C13, C15, and C16 and on the MW-20 Bench.	March 9, 2019
Addendum #1 to ERTC #5r	Scope included the potholing to locate Transwestern Gas Pipeline within NTH (in support of Pipeline C installation).	April 24, 2019
5s	Scope included the site setup, drilling, testing, and demobilization at IRZ-39 in the low area, north of the Transwestern Bench.	March 12, 2019
5t	Scope included the site setup, drilling, testing, and demobilization at IRZ-27 along NTH.	March 19, 2019
5u	Scope included the site setup, drilling, testing, and demobilization at MW-U in I-40 median.	March 22, 2019
5v	Scope included the site setup, drilling, testing, and demobilization at MW-10D in Bat Cave Wash.	March 27, 2019
5w	Scope included the site setup, drilling, testing, and demobilization at MW-W in the floodplain.	March 22, 2019
5x	Scope included the site setup, drilling, testing, and demobilization at RB-1 through 5 wells and MW-O in the floodplain.	March 30, 2019
5у	Scope included the site setup, drilling, testing, and demobilization at MW-S on the access road to Bat Cave Wash.	April 12, 2019
5z	Scope included the site setup, drilling, testing, and demobilization at MW-R in the Upland.	May 8, 2019
5aa	Scope included the site setup, drilling, testing, and demobilization at MW-C, MW-D, and MW-H in the floodplain	June 6, 2019
5ab	Scope included the site setup, drilling, testing, and demobilization at IRZ-19 (sonic drilling) in the floodplain	July 22, 2019

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# Table 2-2 Summary of Work Variance Requests (WVRs)

July 2019 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup PG&E Topock Compressor Station, Needles, California

WVR No.	Brief Description of Work Variance Request	Approval Dates
1	<ul> <li>This WVR addressed PG&amp;E's proposed modification to the brine tanks containment for use by the remedy, specifically:</li> <li>Upgrade the existing lined containment to concrete - The original synthetic liner material has degraded from exposure to UV light, heat, and abrasion and must be replaced. PG&amp;E proposed to replace the synthetic-lined containment (including K-rails) with a concrete containment to support the groundwater remedy. The concrete color will be desert tan, and information on this proposed concrete color will be submitted to the agencies for review. The proposed concrete material will be similar to the material of the truck lane in the final remedy design (see Appendix E of the Final Basis of Design Report (CH2M, 2015a),* Section 033 00, Cast-In-Place Concrete).</li> <li>Shorten the length of the containment - This containment will have the same height as the existing containment, but with a slightly smaller footprint (the length is 5 feet shorter). This smaller footprint still meets the required volume for a secondary containment and allows for more space for remedy construction at the tight MW-20 bench.</li> </ul>	DOI approved WVR #1 on June 22, 2018 DTSC approved WVR #1 on July 5, 2018
2	PG&E proposed to relocate the tie-in point for remedy construction water to an aboveground location inside TCS and below the TCS Water Storage Tanks. This is to eliminate the risk of damaging the existing pressurized 6-inch water line and to avoid any interference with PG&E Gas Operations control of the Station's water supply. The WVR addressed this relocation, specifically:  • Relocate the construction water tie-in point to an aboveground location below the TCS Water Storage Tanks, inside TCS – The final design calls for the temporary construction water line to hot-tap into the existing 6-inch steel water line just as the line turns southwest to continue to TCS. PG&E proposed to move the tie-in point to an aboveground valve manifold, located below the TCS Water Storage Tanks in the boneyard area.  • Extend the temporary construction water line to the new tie-in point, along Pipeline 300A access road – The planned 4-inch high-density polyethylene (HDPE) temporary construction water line will be extended, following the route of the Pipeline 300A access road, to the new tie-in point inside TCS. This pipeline extension is approximately 1,950 feet and is also made of 4-inch HDPE. The pipe will be laid on ground surface and to the south of the 6-inch water line where possible. At the crossing with the SoCal Gas pipeline access road, the pipeline will be at grade with fill to allow for vehicle crossing.	DOI/DTSC approved WVR #2 on August 29, 2018
3	<ul> <li>PG&amp;E proposed changes within the CHQ fence line to avoid/minimize the overall amount of soil disturbance during construction, reduce the number of truck trips to haul wastewater, and allow for additional working space within the yard. There are no proposed changes to the CHQ footprint nor its fence line. The specifics are described below:</li> <li>Relocate the decontamination pad from the western fence to the northern fence (near the western corner). Based on recent survey data collected during construction, the difference in ground elevation between northern and southern end of the pad is about 4 feet. Moving the pad to the northern fence would eliminate the difference in ground elevation and reduce the amount of soil disturbance by at least 80 cubic yards.</li> <li>Bring the remedy-produced wastewater tank from belowground to aboveground, increase the tank volume from 1,000 to 2,500 gallons, and place the aboveground, double-walled tank adjacent to the decontamination pad. The change from belowground to aboveground reduces the amount of soil disturbance by at least 50 cubic yards. The change to a bigger tank will reduce the amount of truck trips needed to haul wastewater. The placement of the tank adjacent to the decontamination pad allows for the pad to function as a secondary containment for the haul truck during off-loading of the wastewater.</li> <li>Defer construction of the underground sewage tanks. Deferral of the underground tanks reduces the overall amount of soil disturbance by at least 800 cubic yards. All sanitary wastes will be managed in aboveground sewage tanks (similar to the ones currently used for the SPY trailers) or portable toilets.</li> <li>Swap the location of the construction trailers and the sunshade and change the configuration of the sunshade from a rectangle to a square. This change will allow for more working space within the CHQ. All functions that would occur in the Workshop/Sampling Processing building will be conducted in the construction trailers.</li> </ul>	DOI/DTSC approved WVR #3 on January 4, 2019
4	PG&E proposed to revise a segment of Pipeline C near the I-40 bridge, to meet the permit requirement in Caltrans Encroachment Permit No. 08-18-6-MW-0533. The revision involves	DOI/DTSC approved

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#### Table 2-2 Summary of Work Variance Requests (WVRs)

July 2019 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup PG&E Topock Compressor Station, Needles, California

WVR No.	Brief Description of Work Variance Request	Approval Dates
	relocating a small segment of Pipeline C to within National Trails Highway to meet a minimum distance of 10 feet from current and future I-40 bridge footings. The treatment measure specified for Segment X of National Trails Highway in the Cultural and Historic Property Management Plan will be implemented during installation of this pipeline segment.	WVR #4 on May 14, 2019
5	PG&E proposed to phase the remedy produced water conditioning system within the approved footprint inside TCS.	DOI and DTSC approved WVR #5 on July 19 and July 22, 2019, respectively.
6	In early October 2018, PG&E conducted a geotechnical investigation along the Pipeline F alignment on the entrance road to the Topock Compressor Station (TCS) and the adjacent hill side. Based on the geotechnical results, the construction contractor (PIVOX) indicated that soldier piles and lagging would be required for temporary shoring. Over 40 soldier piles would be installed by drilling using a 330-sized excavator or larger. A 330-sized excavator has a general width of 11 feet, and counter weight clearance of approximately 4 feet. During operation, this rig would occupy a minimum 15 to 16 feet width of the TCS entrance road for about 12 days. The paved width of the road is between 22 to 24 feet in the area of shoring (per review of the location via Google Earth).  Assuming a minimum clearance of 1 foot (which is still less than the recommended clearance) from any operating equipment, there will be approximately 5 to 8 feet of available lane width for access by TCS traffic. Large vehicles (tractor-trailers, delivery trucks, construction equipment) will likely not be able to pass by the active operation, and passenger vehicles may also not be able to pass the active operation in locations where the road narrows. Also, the excavator cannot be repositioned while soldier piles are being drilled. In sum, access to TCS will be severely restricted for about 12 days. This is not acceptable for Compressor Station operations.  Therefore, PG&E proposed to realign Pipeline F (starting from segment F3) along the approved alignment of Pipelines B and J. Construction of Pipelines F, B, and J would occur in the same alignment and at the same time.	DOI and DTSC approved WVR #6 on May 21 and May 22, 2019, respectively.

#### Note:

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<sup>\*</sup> CH2M HILL, Inc. (CH2M). 2015a. Basis of Design Report/Final (100%) Design Submittal for the Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, California. November 18.

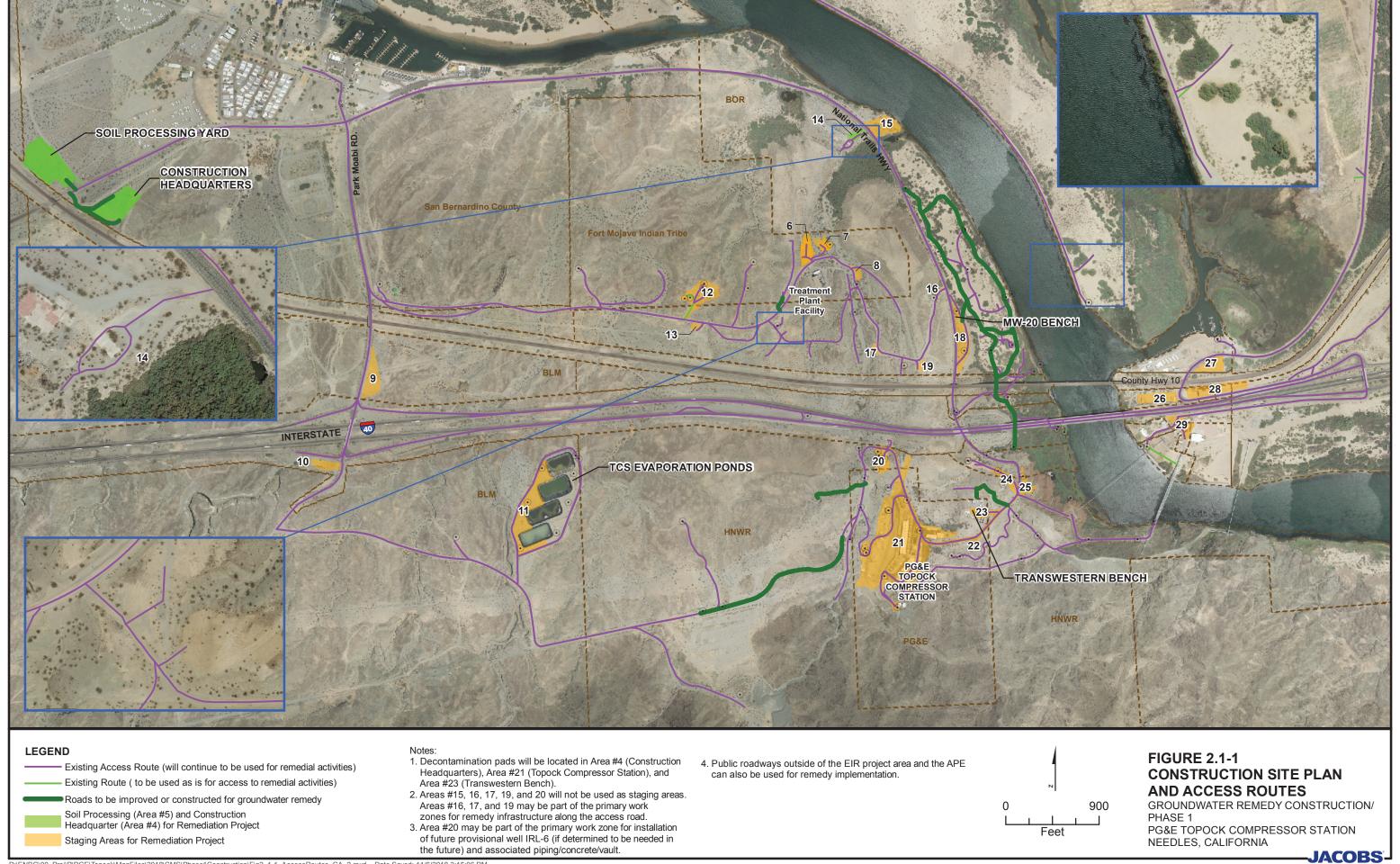
# **Table 2-3 Summary of Percent Completeness of Key Construction Activities**

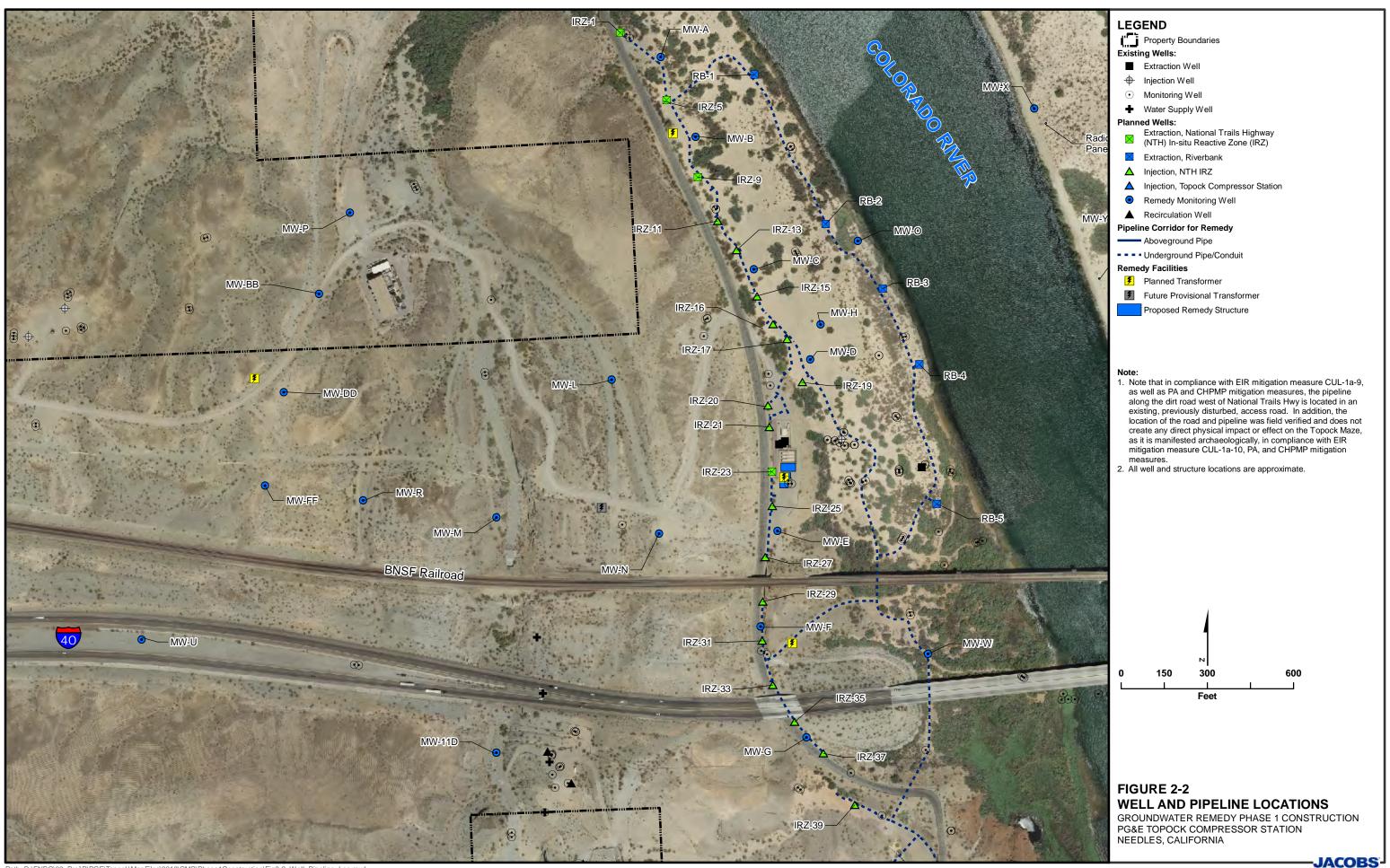
July 2019 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup PG&E Topock Compressor Station, Needles, California

Activity	% Complete	Current Status of Construction Activities (as of July 31, 2019)
Project signage & Public Information Office	100%	Complete.
Staging Area 9 setup	100%	Complete.
Staging Area 23 setup	100%	Complete.
Staging Area 18 setup	100%	Complete.
Temporary construction offices at Soil Processing Yard	100%	Complete.
Soil Processing Yard setup for construction staging	100%	Complete.
National Trails Highway lane closure and traffic control installation	100%	Complete.
Temporary construction water line	100%	Complete.
TCS Ponds concrete containment pad	100%	Complete.
Construction Headquarters (CHQ) access road	100%	Complete.
Aggregate-based access road in floodplain	Not Available	Portion north of BNSF bridge is substantially complete.
CHQ security fence	100%	Complete
MW-L, N, E, W, O, R, 10D	100%	Complete.
MW-M, MW-F, MW-G	Not Available	Well construction complete. Surface completion will be scheduled when rig is available.
MW-B-33, MW-B-117, and MW-B-337	Not Available	Well construction complete.
MW-B-267	Not Available	Preparing for well abandonment and replacement are
MW-C, MW-H, MW-X	Not Available	Underway
RB-5, RB-4, RB-3, RB-2, IRZ-9, 13, 15, 16, 17, 21, 23, 25, 27, and 39 pilot borings	100%	Complete.
IRZ-20 remedy well	Not Available	Well construction and development complete. Specific capacity testing conducted in July. Additional testing in September.
IRZ-21 and IRZ-23 remedy wells	Not Available	Well construction complete. Well testing in August/September.
Pipeline C Segments C3, C4, C5	Not Available	Substantially complete. Testing of electrical conduits in September.
Brine Tanks containment upgrade	100%	Complete.
Pipeline B and J	Not Available	Start on August 12, 2019.

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**Figures** 





# **Attachment A Photographs**



Placement of red slurry warning layer over electrical trench along Pipeline C Segment C3



Wash out of slurry mix into the secondary containments in the floodplain

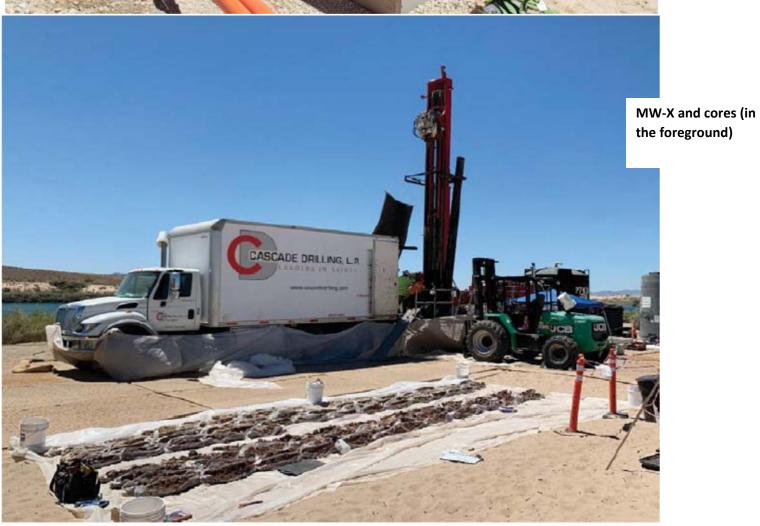


Applying water at MW-20 bench for dust control



Well development at MW-R









# Attachment B Available Boring Logs, Well Construction Logs, Well Testing, and Groundwater Sample Results from Well Drilling

**Table B-1. Groundwater Sampling Results** 

Location	Sample ID	Sample Date	Depth Interval (ft bgs)	Total Dissolved Chromium (μg/L)	Hexavalent Chromium (μg/L)
MW-10D	MW-10D-041119	04/11/19	108 - 123	160	160
MW-10D	MW-10D-VAS-107-112	04/01/19	107 - 112	95	96
MW-10D	MW-10D-VAS-118-123	04/02/19	118 - 123	200	190
MW-B	MW-B-VAS-27-32	01/06/19	27 - 32	5.9 J	7.7J
MW-B	MW-B-VAS-47-52	01/09/19	47 - 52	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-67-72	01/09/19	67 - 72	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-102-107	01/10/19	102 - 107	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-142-147	01/15/19	142 - 147	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-182-187	02/13/19	182 - 187	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-207-212	02/14/19	207 - 212	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-247-252	02/17/19	247 - 252	11 J	< 0.83 U
MW-B	MW-B-VAS-264-269	02/18/19	264 - 269	< 0.13 U	< 0.33 U
MW-B	MW-B-VAS-287-292	02/20/19	287 - 292	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-317-322	02/21/19	317 - 322	< 0.13 U	< 0.17 U
MW-B	MW-B-VAS-339-344	02/27/19	339 - 344	< 0.13 U	< 0.33 U
MW-B	MW-B-VAS-352-357	02/28/19	352 - 357	0.603 J	< 0.33 U
MW-B	MW-B-117-033019	03/30/19	WD, 117	< 0.13 U	< 0.17 U
MW-B	MW-B-33-033119	03/31/19	WD, 33	3.7	2.3
MW-B	MW-B-337-062619- INTERIM	6/26/19	WD	0.255 J	< 0.17 U
MW-C	MW-C-VAS-26-31	6/19/19	26-31	360	380
MW-C	MW-C-VAS-51-56	6/25/19	51-56	0.13 U	0.146 J
MW-C	DUP-01-062519	6/25/19	51-56	< 0.13 U	0.0931 J
MW-C	MW-C-VAS-66-71	6/26/19	66-71	< 0.13 U	< 0.033 U
MW-C	MW-C-VAS-81-86	6/27/19	81-86	< 0.13 U	< 0.17 U
MW-C	MW-C-VAS-117-122	6/28/19	117-122	< 0.13 U	< 0.17 U
MW-C	MW-C-VAS-147-152	6/29/19	147-152	< 0.13 U	< 0.17 U
MW-C	MW-C-VAS-165-170	6/30/19	165-170	< 0.13 U	< 0.17 U
MW-C	MW-C-VAS-176-181	7/1/19	176-181	380	410
MW-C	MW-C-VAS-186-191	7/1/19	186-191	< 0.13 U	< 0.17 U
MW-C	MW-C-VAS-200-205	7/2/19	200-205	< 0.13 U	< 0.17 U
MW-C	MW-C-VAS-216-221	7/3/19	216-221	0.448 J	< 0.17 U
MW-E	MW-E-VAS-52-57	11/05/18	52 - 57	7800	7000
MW-E	MW-E-VAS-82-87	11/06/18	82 - 87	190	200
MW-E	MW-E-VAS-112-117	11/06/18	112 - 117	3000	3100
MW-E	MW-E-VAS-137-142	11/07/18	137 - 142	7900	7300
MW-E	MW-E-70-121418	12/14/18	WD, 70	-	3000

**Table B-1. Groundwater Sampling Results** 

Location	Sample ID	Sample Date	Depth Interval (ft bgs)	Total Dissolved Chromium (μg/L)	Hexavalent Chromium (μg/L)
MW-E	MW-E-142-121418	12/14/18	WD, 142	4500	4200
MW-F	MW-F-VAS-52-57	01/06/19	52 - 57	2700	2500
MW-F	MW-F-VAS-82-87	01/07/19	82 - 87	120	110
MW-F	MW-F-VAS-97-102	01/07/19	97 - 102	1900	1800
MW-F	MW-F-VAS-112-117	01/08/19	112 - 117	790	740
MW-F	MW-F-104-022719	02/27/19	WD, 104	1800	1700
MW-F	MW-F-60-022819	02/28/19	WD, 60	2300	2200
MW-G	MW-G-VAS-52-57	02/13/19	52 - 57	790	680
MW-G	MW-G-VAS-67-72	02/14/19	67 - 72	1000	920
MW-G	MW-G-VAS-77-82	02/15/19	77 - 82	710	600
MW-G	MW-G-82-030219	03/02/19	WD, 82	1500	1500
MW-G	MW-G-57-030219	03/02/19	WD, 57	510	560
MW-L	MW-L-VAS-76-81	10/06/18	76 - 81	34	31
MW-L	MW-L-VAS-106-111	10/09/18	106 - 111	0.697 J	0.84
MW-L	MW-L-VAS-141-146	10/10/18	141 - 146	< 0.13 U	< 0.033 U
MW-L	MW-L-VAS-181-186	10/20/18	181 - 186	3.8	3.3
MW-L	MW-L-VAS-218-223	10/21/18	218 - 223	68	66
MW-L	MW-L-VAS-261-266	10/22/18	261 - 266	0.284 J	< 0.17 U
MW-L	MW-L-180-032819	03/28/19	WD, 180	< 0.13 U	< 0.17 U
MW-L	MW-L-245-030319	03/03/19	WD, 245	14	15
MW-L	MW-L-90-032919	03/29/19	WD, 90	19	18
MW-L	MW-L-225-032919	03/29/19	WD, 225	410	380
MW-M	MW-M-VAS-52-57	03/28/19	52 - 57	29	28
MW-M	MW-M-VAS-72-77	03/29/19	72 - 77	< 0.13 U	< 0.033 U
MW-M	MW-M-VAS-107-112	03/30/19	107 - 112	< 0.13 U	< 0.033 U
MW-M	MW-M-VAS-147-152	03/31/19	147 - 152	< 0.13 U	< 0.17 U
MW-M	MW-M-VAS-172-177	04/02/19	172 - 177	< 0.13 U	< 0.033 U
MW-M	MW-M-VAS-190-195	04/10/19	190 - 195	< 0.13 U	< 0.17 U
MW-M	MW-M-132-061519	6/16/19	WD	< 0.13 U	< 0.033 U
MW-M	MW-M-193-061419	6/14/19	WD	< 0.13 U	< 0.17 U
MW-M	MW-M-57-061719	6/17/19	WD	0.715 J	0.72
MW-M	MW-M-95-061619	6/16/19	WD	< 0.13 U	< 0.033 U
MW-N	MW-N-VAS-121-126	02/14/19	121 - 126	0.699 J	0.51
MW-N	MW-N-VAS-142-147	02/16/19	142 - 147	< 0.13 U	< 0.033 U
MW-N	MW-N-VAS-173-178	02/18/19	173 - 178	< 0.13 U	< 0.033 U
MW-N	MW-N-VAS-210-215	02/21/19	210 - 215	320	290
MW-N	MW-N-VAS-228-233	02/26/19	228 - 233	< 0.13 U	< 0.17 U

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**Table B-1. Groundwater Sampling Results** 

Location	Sample ID	Sample Date	Depth Interval (ft bgs)	Total Dissolved Chromium (μg/L)	Hexavalent Chromium (μg/L)
MW-N	MW-N-217-040219	04/02/19	WD, 217	110	110
MW-N	MW-N-237-040119	04/01/19	WD, 237	1600	1500
MW-N	MW-N-129-040319	04/03/19	WD, 129	45	46
MW-O	MW-O-VAS-101-106	05/10/19	101 - 106	< 0.13 U	< 0.033 U
MW-O	MW-O-VAS-106-111	05/11/19	106 - 111	< 0.13 U	< 0.17 U
MW-O	MW-O-VAS-12.5-17.5	05/08/19	12 - 18	< 0.13 U	0.163 J
MW-O	MW-O-VAS-136-141	05/11/19	136 - 141	< 0.13 U	< 0.17 U
MW-O	MW-O-VAS-51-56	05/09/19	51 - 56	< 0.13 U	< 0.033 U
MW-O	MW-O-VAS-66-71	05/09/19	66 - 71	< 0.13 U	0.178 J
MW-O	MW-O-140-071819	7/18/19	WD	< 0.13 U	< 0.17 U
MW-O	MW-O-30-071719	7/17/19	WD	< 0.13 U	< 0.033 U
MW-O	MW-O-66-071519	7/15/19	WD	< 0.13 U	< 0.033 U
MW-R	MW-R-VAS-92-97	05/13/19	92 - 97	42	45
MW-R	MW-R-VAS-117-122	05/14/19	117 - 122	4.6	5.8
MW-R	MW-R-VAS-151-156	05/15/19	151 - 156	<0.13 U	< 0.033 U
MW-R	MW-R-VAS-192-197	05/16/19	192 - 197	<0.13 U	< 0.033 U
MW-R	MW-R-VAS-227-232	05/17/19	227 - 232	<0.13 U	< 0.033 U
MW-R	MW-R-VAS-255-260	05/29/19	255 - 260	<0.13 U	< 0.17 U
MW-R	MW-R-VAS-269-274	05/30/19	269 - 274	<0.13 U	< 0.17 U
MW-R	MW-R-109-062819	6/28/19	WD	2.6	2.5
MW-R	MW-R-139-071319	7/13/19	WD	< 0.13 U	< 0.033 U
MW-R	MW-R-192-070219	7/2/19	WD	< 0.13 U	< 0.033 U
MW-R	MW-R-275-070919	7/9/19	WD	< 0.13 U	< 0.17 U
MW-W	MW-W-VAS-7-12	03/27/19	7 - 12	0.266 J	< 0.17 U
MW-W	MW-W-VAS-22-27	03/28/19	22 - 27	< 0.13 U	< 0.33 U
MW-W	MW-W-31-040419	04/04/19	WD, 31	< 0.13 U	< 0.17 U
MW-X	MW-X-VAS-12-17	06/25/19	12-17	1.2	< 0.033 U
MW-X	MW-X-VAS-32-37	06/26/19	32-37	< 0.13 U	< 0.033 U
MW-X	MW-X-VAS-71-76	6/27/19	71 - 76	< 0.13 U	< 0.033 U
MW-X	MW-X-VAS-107-112	6/27/19	107-112	< 0.13 U	< 0.033 U
MW-X	MW-X-VAS-112-117	6/28/19	112-117	< 0.13 U	< 0.033 U
MW-X	MW-X-VAS-152-157	6/29/19	152-157	< 0.13 U	< 0.17 U
MW-X	MW-X-VAS-182-187	6/29/19	182-187	< 0.13 U	< 0.17 U
MW-X	MW-X-VAS-207-212	6/30/19	207-212	< 0.13 U	< 0.17 U
MW-X	MW-X-VAS-245-250	7/1/19	245-250	< 0.13 U	< 0.033 U
MW-X	MW-X-VAS-292-297	7/2/19	292-297	< 0.13 U	< 0.17 U

**Table B-1. Groundwater Sampling Results** 

Location	Sample ID	Sample Date	Depth Interval (ft bgs)	Total Dissolved Chromium (μg/L)	Hexavalent Chromium (μg/L)
MW-X	MW-X-VAS-337-342	7/11/19	337-342	0.564 J	< 0.17 U
MW-X	MW-X-VAS-382-387	7/13/19	382-387	0.582 J	< 0.17 U
MW-X	MW-X-VAS-412-417	7/15/19	412-417	38	< 0.17 U
MW-U	MW-U-VAS-137-142	04/12/19	137 - 142	0.818 J	1.4
MW-U	MW-U-VAS-181-186	04/13/19	181 - 186	< 0.13 U	0.112 J
MW-U	MW-U-VAS-222-227	04/14/19	222 - 227	< 0.13 U	< 0.033 U
MW-U	MW-U-VAS-257-262	04/16/19	257 - 262	< 0.13 U	0.0896 J
MW-U	MW-U-VAS-287-292	04/17/19	287 - 292	< 0.13 U	< 0.033 U
MW-U	MW-U-VAS-317-322	04/24/19	317 - 322	< 0.13 U	< 0.17 U
MW-U	MW-U-183-050819	05/08/19	WD, 183	< 0.13 U	< 0.033 U
MW-U	MW-U-273-051019	05/10/19	WD, 273	< 0.13 U	< 0.033 U
IRZ-9	IRZ-9-VAS-27-32	12/03/18	27 -32	120	120
IRZ-9	IRZ-9-VAS-47-52	12/04/18	47 -52	< 0.13 U	< 0.033 U
IRZ-9	IRZ-9-VAS-62-67	12/04/18	62 -67	< 0.13 U	< 0.033 U
IRZ-9	IRZ-9-VAS-182-187	12/11/18	182 -187	< 0.13 U	< 0.17 U
IRZ-9	IRZ-9-VAS-207-212	12/13/18	207 -212	< 0.13 U	< 0.17 U
IRZ-9	IRZ-9-VAS-232-237	12/13/18	232 -237	0.811 J	< 0.17 U
IRZ-9	IRZ-9-VAS-264-269	12/15/18	264 -269	< 0.13 U	< 0.17 U
IRZ-9	IRZ-9-VAS-276-281	12/16/18	276 -281	< 0.13 U	< 0.17 U
IRZ-9	IRZ-9-VAS-292-297	12/18/18	292 -297	< 0.13 U	< 0.17 U
IRZ-13	IRZ-13-VAS-32-37	11/17/18	32 - 37	170	220
IRZ-13	IRZ-13-VAS-57-62	11/18/18	57 - 62	< 0.13 U	< 0.17 U
IRZ-13	IRZ-13-VAS-102-107	11/19/18	102 - 107	< 0.13 U	< 0.17 U
IRZ-13	IRZ-13-VAS-142-147	11/19/18	142 - 147	< 0.13 U	< 0.17 U
IRZ-13	IRZ-13-VAS-180-185	11/27/18	180 - 185	230	190
IRZ-13	IRZ-13-VAS-197-202	11/28/18	197 - 202	< 0.13	< 0.83
IRZ-13	IRZ-13-VAS-224-229	11/28/18	224 - 229	< 0.13	< 0.83
IRZ-13	IRZ-13-VAS-237-242	11/29/18	237 - 242	< 0.13 U	< 0.17 U
IRZ-15	IRZ-15-VAS-32-37	11/01/18	32 - 37	13	13
IRZ-15	IRZ-15-VAS-62-67	11/02/18	62 - 67	< 0.65 U	0.459 J
IRZ-15	IRZ-15-VAS-102-107	11/03/18	102 - 107	< 0.65 U	< 0.17 U
IRZ-15	IRZ-15-VAS-132-137	11/04/18	132 - 137	0.228 J	< 0.17 U
IRZ-15	IRZ-15-VAS-162-167	11/05/18	162 - 167	3400	3200
IRZ-15	IRZ-15-VAS-182-187	11/06/18	182 - 187	130	140
IRZ-15	IRZ-15-VAS-222-227	11/07/18	222 - 227	< 0.13 U	< 0.17 U
IRZ-16	IRZ-16-VAS-27-32	02/20/19	27 - 32	480	480
IRZ-16	IRZ-16-VAS-57-62	02/20/19	57 - 62	< 0.33 U	< 0.33 U

B-4 AX0206192356BAO

**Table B-1. Groundwater Sampling Results** 

Location	Sample ID	Sample Date	Depth Interval (ft bgs)	Total Dissolved Chromium (μg/L)	Hexavalent Chromium (μg/L)
IRZ-16	IRZ-16-VAS-102-107	02/21/19	102 - 107	< 0.33 U	< 0.33 U
IRZ-16	IRZ-16-VAS-132-137	02/26/19	132 - 137	< 0.17 U	< 0.17 U
IRZ-16	IRZ-16-VAS-147-152	02/27/19	147 - 152	< 0.17 U	< 0.17 U
IRZ-16	IRZ-16-VAS-172-177	02/27/19	172 - 177	110	110
IRZ-16	IRZ-16-VAS-192-197	02/28/19	192 - 197	< 0.17 U	< 0.17 U
IRZ-17	IRZ-17-VAS-32-37	03/02/19	32 - 37	78	67
IRZ-17	IRZ-17-VAS-62-67	03/02/19	62 - 67	0.750 J	0.604 J
IRZ-17	IRZ-17-VAS-102-107	03/03/19	102 - 107	< 0.13 U	< 0.17 U
IRZ-17	IRZ-17-VAS-132-137	03/13/19	132 - 137	< 0.13 U	< 0.17 U
IRZ-17	IRZ-17-VAS-137-142	03/12/19	137 - 142	< 0.13 U	< 0.13 U
IRZ-17	IRZ-17-VAS-142-147	03/04/19	142 - 147	68	84
IRZ-17	IRZ-17-VAS-147-152	03/12/19	147 - 152	< 0.13 U	< 0.33 U
IRZ-17	IRZ-17-VAS-152-157	03/04/19	152 - 157	16	7.0
IRZ-17	IRZ-17-VAS-162-167	03/04/19	162 - 167	< 0.13 U	< 0.17 U
IRZ-17	IRZ-17-VAS-172-177	03/05/19	172 - 177	< 0.13 U	< 0.17 U
IRZ-20	IRZ-17-VAS-197-202	03/06/19	197 - 202	< 0.13 U	< 0.17 U
IRZ-20	IRZ-17-VAS-217-222	03/06/19	217 - 222	< 0.13 U	< 0.17 U
IRZ-20	IRZ-20-VAS-112-117	10/22/18	112 - 117	< 0.13 U	< 0.17 U
IRZ-20	IRZ-20-VAS-131-136	10/23/18	131 - 136	< 0.13 U	< 0.17 U
IRZ-20	IRZ-20-VAS-173-178	10/24/18	173 - 178	< 0.13 U	< 0.83 U
IRZ-21	IRZ-21-VAS-52-57	12/15/18	52 - 57	100	97
IRZ-21	IRZ-21-VAS-77-82	12/16/18	77 - 82	1.3	1.1
IRZ-21	IRZ-21-VAS-112-117	12/16/18	112 - 117	< 0.13 U	< 0.17 U
IRZ-21	IRZ-21-VAS-132-137	12/17/18	132 - 137	< 0.13 U	< 0.17 U
IRZ-21	IRZ-21-VAS-147-152	12/18/18	147 - 152	4000	3600
IRZ-23	IRZ-23-VAS-67-72	12/01/18	67 - 72	86	85
IRZ-23	IRZ-23-VAS-92-97	12/01/18	92 - 97	0.453 J	< 0.033 U
IRZ-23	IRZ-23-VAS-122-127	12/02/18	122 - 127	2100	2000
IRZ-23	IRZ-23-VAS-139-144	12/02/18	139 - 144	3400	3000
IRZ-25	IRZ-25-VAS-52-57	12/05/18	52 - 57	4300	3500
IRZ-25	IRZ-25-VAS-67-72	12/05/18	67 - 72	750	620
IRZ-25	IRZ-25-VAS-92-97	12/06/18	92 - 97	140	130
IRZ-25	IRZ-25-VAS-112-117	12/11/18	112 - 117	< 0.13 U	< 0.17 U
IRZ-25	IRZ-25-VAS-147-152	12/11/18	147 - 152	3800	3600
IRZ-25	IRZ-25-VAS-162-167	12/13/18	162 - 167	3000	3000
IRZ-27	IRZ-27-VAS-52-57	03/15/19	52 - 57	4500	4400
IRZ-27	IRZ-27-VAS-72-77	03/17/19	72 - 77	0.338 J	< 0.033 U

#### **Table B-1. Groundwater Sampling Results**

July 2019 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sample Date	Depth Interval (ft bgs)	Total Dissolved Chromium (μg/L)	Hexavalent Chromium (μg/L)
IRZ-27	IRZ-27-VAS-102-107	03/18/19	102 - 107	< 0.13 U	< 0.17 U
IRZ-27	IRZ-27-VAS-132-137	03/20/19	132 - 137	1200	1300
IRZ-39	IRZ-39-VAS-27-32	03/30/19	27 - 32	31	29
RB-2	RB-2-VAS-102-107	7/1/19	102-107	< 0.13 U	< 0.033 U
RB-2	RB-2-VAS-142-147	7/9/19	142-147	0.270 J	< 0.17 U
RB-2	RB-2-VAS-172-177	7/12/19	172-177	0.233 J	< 0.17 U
RB-2	RB-2-VAS-202-207	7/14/19	202-207	0.218 J	< 0.17 U
RB-2	RB-2-VAS-237-242	7/15/19	237-242	0.233J	< 0.17 U
RB-2	RB-2-VAS-274-279	7/18/19	274-279	0.514 J	< 0.17 U
RB-2	RB-2-VAS-287-292	7/26/19	287-292	Data not yet available	< 0.17 U
RB-2	RB-2-VAS-36.5-41.5	6/29/19	36 - 42	< 0.13 U	< 0.033 U
RB-2	RB-2-VAS-72-77	6/30/19	72 - 77	< 0.13 U	< 0.033 U
RB-3	RB-3-VAS-15-20	04/26/19	15 - 20	< 0.13 U	< 0.033 U
RB-3	RB-3-VAS-50-55	04/27/19	50 - 55	< 0.13 U	0.100 J
RB-3	RB-3-VAS-80-85	04/27/19	80 - 85	< 0.13 U	0.132 J
RB-3	RB-3-VAS-120-125	04/28/19	120 - 125	< 0.13 U	< 0.17 U
RB-3	RB-3-VAS-150-155	04/29/19	150 - 155	0.257 J	< 0.17 U
RB-3	RB-3-VAS-180-185	04/29/19	180 - 185	< 0.13 U	< 0.033 U
RB-3	RB-3-VAS-205-210	04/30/19	205 - 210	< 0.13 U	< 0.17 U
RB-4	RB-4-VAS-15-20	04/12/19	15 - 20	< 0.13 U	0.0556 J
RB-4	RB-4-VAS-41-46	04/12/19	41 - 46	< 0.13 U	< 0.033 U
RB-4	RB-4-VAS-81-86	04/12/19	81 - 86	< 0.13 U	< 0.033 U
RB-4	RB-4-VAS-121-126	04/13/19	121 - 126	< 0.13 U	< 0.033 U
RB-4	RB-4-VAS-136-141	04/13/19	136 - 141	< 0.13 U	< 0.17 U
RB-4	RB-4-VAS-155-160	04/17/19	155 - 160	< 0.13 U	< 0.17 U
RB-5	RB-5-VAS-12-17	04/04/19	12 - 17	0.235 J	0.125 J
RB-5	RB-5-VAS-42-47	04/09/19	42 - 47	< 0.13 U	< 0.033 U
RB-5	RB-5-VAS-82-87	04/09/19	82 - 87	0.769 J	0.127 J

#### Notes:

 $\mu$ g/L = micrograms per liter

ft bgs = feet below ground surface
J = The analyte was positively identified; however, the associated numerical value is an estimated concentration only

U = The analyte was analyzed for but not detected at the analyte method detection limit indicated

VAS = vertical aquifer sampling

WD = sample from well development, depth noted is from bottom of screen

# Table B-2. Specific Capacity Test for IRZ-20

July 2019 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup PG&E Topock Compressor Station, Needles, California

Upper Screen (49 to 71 feet bgs)	Lower Screen (137-155 feet bgs)		
7/11/19 - Conducted Specific Capacity Test	6/29/2019 - Conducted Initial Specific Capacity Test		
Pumping rate approximately 19.75 gallons per minute (gpm)  Duration approximately 22 minutes Purged approximately 351.39 gallons Drawdown approximately 1.84 feet  Pumping rate approximately 6.75 gpm Duration approximately 110 minutes Purged approximately 733.42 gallons Drawdown approximately 0.68 feet	Pumping rate approximately 6.5 gpm  Duration approximately 12 minutes  Purged approximately 68.07 gallons  Drawdown approximately 2.85  Pumping rate approximately 19.2 gpm  Duration approximately 16 minutes  Purged approximately 301.22 gallons  Drawdown approximately 9.19 feet		
Pumping rate approximately 13 gpm	<ul> <li>6/30/19 – Conducted Specific Capacity Test</li> <li>Pumping rate approximately 6.6 gpm</li> <li>Duration 2 hours</li> <li>Purged approximately 737.00 gallons</li> <li>Drawdown approximately 3.26 feet</li> </ul>		
Pumping rate approximately 19.6 gpm	Pumping rate approximately 13.2 gpm  • Duration 2 hours  • Purge approximately 1655.54 gallons  • Drawdown approximately 6.54 feet		
7/12/19 – Conducted Specific Capacity Test Pumping rate approximately 32.9 gpm  • Duration approximately 128 minutes • Purged approximately 4198.63 gallons • Drawdown approximately 3.37 feet  Total Volume Purged – Approximately 9,421 gallons stored in frac tanks on the MW-20 bench	Pumping rate approximately 19.6 gpm  Duration 2 hours Purged approximately 2395.82 gallons Drawdown approximately 14.46 feet  Pumping rate approximately 33.5 gpm Duration approximately 2 hours Purged approximately 4104.90 gallons		
Total Testing Hours – 8.6 Hours	Drawdown approximately 16.39 feet		
	<b>Total Volume Purged</b> – Approximately 9,262 gallons stored in frac tanks on the MW-20 bench		
	Total Testing Hours – 8.5 Hours		

ARCADIS Design & Consultancy for natural and built assets					Well Consti	ruction Log	5	Sheet: 1 of 5		
Date Sta		05/13/2019			_Surface Elevation:	N/A	Well ID: N	/W-M-57, MW-M-95		
	•	07/30/2019			_Shallow Well Elevation:	N/A				
Drilling C		Cascade Sonic Drilling			_ Deep Well Elevation:	N/A N/A	Client: PG&E	SW Remedy Phase 1		
Drilling M Driller Na		Tyler Alymer	•		_Northing (NAD83): _Easting (NAD83):	N/A	•	E Topock, Needles, California		
Drilling A		C. Winland/J		laria	Borehole Diameter:	10-12 inches	Location. <u>r Odl</u>	- Topock, Necdics, California		
Logger:		M. Andrews/			_Water Level Start:	44.23 ft bgs	Proiect Numbe	r: RC000753.0051		
Editor:		Sean McGra			_ _Development End Date:	_	, 			
Total De	pth:	99 ft bgs			_Well Completion:	⊠ Flush Stick-up				
Depth (ft)	Groundwate Sample ID		SOSO	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed		
			NR		(0.0 - 2.0') Concrete Pad (0.5 - 42.0') 2" PVC Sch 80 Casing	(0.6 - 75.0') 2" PVC Sch 80 Casing		(0.0 - 2.0') 9 bags Note: 2.5 x 2.5 ft concrete pad with 18 diameter lockable vault, King Kon-Crete 4000 PSI		
3 4 5					(2.0 - 6.0') Portland Cement 6% Bentonite	(0.0 - 8.0°) 12.0° Borehole	(2.0 - 6.0') 22.2 gallons	(2.0 - 6.0') 50 gallons (125%) Note: Type I, II and V with 6% Bentonite		
_ 7 _ _ 7 _ _ 8 _					(6.0 - 8.5') Bentonite_seal chips		(6.0 - 8.5') 2.57 bags	(6.0 - 8.5') 8 bags (211%) Note: Puregold Medium Chips, use to fill void		
9 10 11 12 13			NR		Cement 6% Bentonite  (10.5 - 11.5') Centralizer  (8.8 - 13.5') Bentonite seal chips		(8.5 - 8.8') 1.2 gallons (8.8 - 13.5') 3.45 bags	(8.5 - 8.8') 50 gallons (4067%) Note: Type I, II and V with 6 % Bentonite, void took grout  (8.8 - 13.5') 8 bags (132%) Note: Halliburton Uniform Granular, boudler fell into borehole about 10' bgs, during casing pull, no apparent damage to well casing		
1415161718181920					(13.5 - 25.0') Grout	(8.0 - 99.0') 10" Borehole	(13.5 - 25.0') 45.5 gallons	(13.5 - 25.0') 100 gallons (120%) Note: Type I, II and V with 6% Bentonite		

in the second se	Water Level Start: Development End Date: Well Completion:	N/A N/A N/A 10-12 inches 44.23 ft bgs	Client: PG&E Project: Final G Location: PG&E	IW-M-57, MW-M-95  GW Remedy Phase 1  Topock, Needles, Californ  RC000753.0051  Material Volumes Installed
ascade onic Drilling /ler Alymer Winland/J. Candelar . Andrews/C.Stewart ean McGrane oft bgs	Deep Well Elevation: Northing (NAD83): Easting (NAD83): ia Borehole Diameter: Water Level Start: Development End Date: Well Completion:  Well C  (0.5 - 42.0') 2" PVC Sch 80 Casing	N/A N/A N/A 10-12 inches 44.23 ft bgs 6/17/2019	Client: PG&E Project: Final G Location: PG&E Project Number:	GW Remedy Phase 1 Topock, Needles, Californ RC000753.0051  Material Volumes
onic Drilling Ver Alymer Winland/J. Candelar Andrews/C.Stewart ean McGrane Oft bgs	Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date: Well Completion:  Well C  (0.5 - 42.0') 2" PVC Sch 80 Casing	N/A N/A 10-12 inches 44.23 ft bgs 6/17/2019	Project: Final G Location: PG&E Project Number: Calculated	GW Remedy Phase 1 Topock, Needles, Californ RC000753.0051  Material Volumes
vler Alymer Winland/J. Candelar . Andrews/C.Stewart ean McGrane  of t bgs	Easting (NAD83):  ria Borehole Diameter:  Water Level Start:  Development End Date:  Well Completion:  Well C  (0.5 - 42.0') 2" PVC  Sch 80 Casing	N/A 10-12 inches 44.23 ft bgs ∴ 6/17/2019  ☑ Flush ☐ Stick-up  Construction	Location: PG&E Project Number:  Calculated	Topock, Needles, Californ  RC000753.0051  Material Volumes
Winland/J. Candelar . Andrews/C.Stewart ean McGrane ) ft bgs	Borehole Diameter:  Water Level Start:  Development End Date:  Well Completion:  Well C  (0.5 - 42.0') 2" PVC  Sch 80 Casing	10-12 inches 44.23 ft bgs 6/17/2019  X Flush Stick-up  Construction	Project Number:	RC000753.0051  Material Volumes
Andrews/C.Stewart ean McGrane of t bgs	Water Level Start: Development End Date: Well Completion:  Well C  (0.5 - 42.0') 2" PVC Sch 80 Casing	44.23 ft bgs : 6/17/2019	Calculated	Material Volumes
ean McGrane ) ft bgs	Development End Date: Well Completion:  Well C  (0.5 - 42.0') 2" PVC  Sch 80 Casing	6/17/2019    Stick-up	Calculated	Material Volumes
ft bgs	Well Completion:  Well C  (0.5 - 42.0') 2" PVC  Sch 80 Casing	Sonstruction  Solution  Construction  Construction  Construction		
	Well C (0.5 - 42.0') 2" PVC Sch 80 Casing	Construction (0.6 - 75.0') 2" PVC		
Geologic Formation	(0.5 - 42.0') 2" PVC ———————————————————————————————————	(0.6 - 75.0') 2" PVC		
	Sch 80 Casing			
			(13.5 - 25.0') 45.5 gallons	(13.5 - 25.0') 100 gallons (120 Note: Type I, II and V with 6' Bentonite
NR	(25.0 - 36.0') Bentonite seal chips	— (8.0 - 99.0') 10" Borehole	(25.0 - 36.0') 8.08 bags	(25.0 - 36.0') 9 bags (11% Note: Puregold Medium Chi
Topock - Alluvium SM Deposits	(36.0 - 61.0') Cemex #3 MESH (8x10)		(36.0 - 61.0') 25.4 bags	(36.0 - 61.0') 39 bags (54% Note: Lapis Lustre Sand
CS = Unified Soil Clas	sification System, ft = feet, bgs	= below ground surface, ar	nsl = above mean s	ea level, GW = groundwa
	<u> </u>	<del>-</del>		
	Topock - Alluvium Deposits  S = Unified Soil Clas	Topock - Alluvium Deposits  SM  (36.0 - 61.0') Cemex #3 MESH (8x10)  CS = Unified Soil Classification System, ft = feet, bgs on, U = not detected above the laboratory reporting	Topock - Alluvium Deposits SM (36.0 - 61.0') Cemex—#3 MESH (8x10)  CS = Unified Soil Classification System, ft = feet, bgs = below ground surface, aron, U = not detected above the laboratory reporting limit, NR = No Recovery, bl	(25.0 - 36.0') Bentonite seal chips  (36.0 - 61.0') Cemex.  Alluvium Deposits  SM  (36.0 - 61.0') 25.4 bags  (36.0 - 61.0') 25.4 bags  SS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean son, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbols.

	<b>NRCA</b>	DIS Design & for natura built asset	Consultancy al and ets		Well Consti	ruction Log	5	Sheet: 3 of 5
Date St	tarted:	05/13/2019			_Surface Elevation:	N/A	Well ID: N	//W-M-57, MW-M-95
Date Co	ompleted:	07/30/2019			_Shallow Well Elevation:	N/A		
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: <u>PG&amp;E</u>	
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	N/A	Project: Final (	GW Remedy Phase 1
Driller N	lame:	Tyler Alymer			_Easting (NAD83):	N/A	Location: <u>PG&amp;E</u>	Topock, Needles, California
Drilling .	Asst:	C. Winland/J.	Cande	laria	_Borehole Diameter:	<u>10-12 inches</u>		
Logger	:	M. Andrews/0	C.Stewa	art	Water Level Start: 44.23 ft bgs		Project Number	r: RC000753.0051
Editor:		Sean McGrar	ne		_Development End Date:	6/17/2019		
Total D	epth:	99 ft bgs			_Well Completion:			
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
41		Topock - Alluvium Deposits	SM		(0.5 - 42.0') 2" PVC Sch 80 Casing (40.5 - 41.5') Centralizer (42.0 - 57.0') 2" Sch So PVC (20-slot)	(0.6 - 75.0') 2" PVC Sch 80 Casing		
43 		Topock - Alluvium Deposits	SC		Screen Screen		Jo.	0
45		Topock - Alluvium Deposits	SM					
47							3	
48 		Topock - Alluvium Deposits	SC					
50  51 		Topock - Alluvium Deposits	SM		(36.0 - 61.0') Cemex	(8.0 - 99.0') 10" Borehole	(36.0 - 61.0') 25.4 bags	(36.0 - 61.0') 39 bags (54%) Note: Lapis Lustre Sand
52		Topock - Alluvium Deposits	GM					
54 55 55 56 57	MW-M-VAS 52-57 (28 ppb) 3/28/2019 11:10	Topock - Alluvium Deposits	SM					
58 59 60			NR		(57.5 - 58.5') Centralizer  (57.0 - 59.4') Sump — and End Cap	A CAST AND		sea level GW = groundwater

9/	ARCA	DIS Design for na built a	n & Consultancy etural and assets		Well Const	ruction Log	S	Sheet: 4 of 5
	Started:	05/13/2019			_Surface Elevation:	N/A	Well ID: N	/W-M-57, MW-M-95
	-	07/30/2019			Shallow Well Elevation:	N/A		·
Drilling		Cascade			Deep Well Elevation:	N/A	Client: PG&E	
Drilling Driller		Sonic Drillin	-		Northing (NAD83):	N/A	•	GW Remedy Phase 1
		Tyler Alyme		alaria	Easting (NAD83): Borehole Diameter:	N/A 10-12 inches	Location: PG&E	Topock, Needles, California
Logge	Drilling Asst: <u>C. Winland/J. Candelaria</u> Logger: <u>M. Andrews/C.Stewart</u>		Water Level Start:	44.23 ft bgs	Project Number	:: RC000753.0051		
Editor:		Sean McGr		a	Development End Date:			. 110000100.0001
Total D		99 ft bgs			Well Completion:			
_		is E	1,0	10				
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	construction	Calculated Material Volumes	Material Volumes Installed
 61				$\setminus$	(36.0 - 61.0') Cemex #3 MESH (8x10)	.: (0.6 - 75.0') 2" PVC Sch 80 Casing	(36.0 - 61.0') 25.4 bags	(36.0 - 61.0') 39 bags (54%) Note: Lapis Lustre Sand
				$  \rangle /  $				
62				$  \setminus    $				
				$  \setminus    $				
63				$  \   \  $				
			NR					
64				$  \ \ \ \ \ \  $				
<b>-</b> -				$  / \rangle  $				
65				/	(61.0 - 70.0')		(04.0, 70.0)) 7.0	(04.0. 70.01) 0.1 1- 1- (40/)
				/ \	Bentonite seal — pellets		(61.0 - 70.0') 7.9 buckets	(61.0 - 70.0') 8 buckets (1%) Note: Pel-Plug (TR30) 3/8â€□
66				/ \	pellets			
 67				/ \				
_0/_		Topock -		6 X D				
68		Alluvium Deposits						
				// //				
69								
70		Topock -	SM		(69.5 - 70.5')	(8.0 - 99.0') 10"		
L –		Deposits	:		Centralizer	Borehole		
71								
<u> </u>								
72								
<u> </u>				10 PIC				
73				3				
<b>-</b> -	MW-M-VAS	Topock -		18 PJC				
74	72-77 (<0.033 U	Alluvium Deposits		G G				
	ppb) 3/29/2019	Боровно		10 P.C				(70.0 - 99.0') 31 bags (-3%)
75	14:01				(70.0 - 99.0') Cemex : : : : : : : : : : : : : : : : :	(75.0 - 95.0') 2" Sch	(70.0 - 99.0') 32 bags	Note: Lapis Lustre Sand
76				10 PIC		80 PVC (20-slot) Screen		
76								
77								
78		Topock - Alluvium						
L _		Deposits		KYP				
79								
L -				120				
80		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10 11 5	<u> </u>			L	

9/	4RC4	DIS Design & for nature built asset	Consultancy al and ets		Well Const	ruction Log		Sheet: 5 of 5
Date S	Started:	05/13/2019			_Surface Elevation:	N/A	Well ID: I	MW-M-57, MW-M-95
Date 0	Completed:	07/30/2019			_Shallow Well Elevation:	N/A		
Drilling	g Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&I	E
Drilling	g Method:	Sonic Drilling			Northing (NAD83): N/A		•	GW Remedy Phase 1
	Name:	Tyler Alymer			_Easting (NAD83):	N/A	Location: <u>PG&amp;I</u>	E Topock, Needles, California
Drilling	g Asst:	C. Winland/J.			Borehole Diameter: <u>10-12 inches</u>			
			_Water Level Start: 44.23 ft bgs		Project Number: RC000753.0051			
Editor:			_Development End Date:		_			
Total [	Depth:	99 ft bgs	1		_Well Completion:	⊠ Flush Stick-up		
Depth (ft)	Groundwat Sample II		USCS	USCS	Well C	Construction	Calculated Material Volumes	Material Volumes Installed
81 82 83		Topock - Alluvium Deposits	GM			(75.0 - 95.0') 2" Sch 80 PVC (20-slot) Screen		
84 84 85		Topock - Alluvium Deposits	ML					(3)
86 87 88		Topock - Alluvium Deposits	SM				3	
89  90		Topock - Alluvium Deposits	SC		(70.0 - 99.0') Cemex #3 MESH (8x10)	(8.0 - 99.0') 10" Borehole	(70.0 - 99.0') 32 bags	(70.0 - 99.0') 31 bags (-3%) Note: Lapis Lustre Sand
9192939495969798		Topock - Alluvium Deposits	SW-SM		(95.5 - 96.5') Centralizer	(95.0 - 97.4') Sump and End Cap		
33					End of Boring at		-	•
100	1				99.0 'bgs.			
	viations: I	ISCS - Unified	ا جمنا ۲	laccificat	tion System ft - foot has	= below ground surface, an	nel – ahove mean	sea level GW = groundwater

ARCA	DIS Design & Confor natural and built assets	nsultancy nd	Well Construc	ction Log		Sheet: 1 of 11
_	03/20/2019		_Surface Elevation: N//		Well ID: I	MW-M-132, MW-M-193
ate Completed: <u>(</u>			_Shallow Well Elevation: <u>N//</u>			· · · · · · · · · · · · · · · · · · ·
•	Cascade		Deep Well Elevation: <u>N//</u>		Client: PG&E	
rilling Method: S	~		Northing (NAD83): N//		•	GW Remedy Phase I
	Гуler Alymer		Easting (NAD83): <u>N//</u>		Location: <u>PG&amp;</u> E	Topock, Needles, California
•	C. Winland/J. (			2 inches		
	C. Bonessi/R. I			.85 ft bgs	Project Numbe	r: RC000753.0051
_	Sean McGrane	)	Development End Date: 6/1			
tal Depth: 2	216 ft bgs		_Well Completion:	Flush Stick-up		Г
Groundwater Sample ID	Geologic	USCS Code USCS Class	Well Constr	uction	Calculated Material Volumes	Material Volumes Installed
1 _			(0.0 - 1.5') Concrete Pad (0.5 - 112.0') 2" PVC Sch 80 Casing	(0.6 - 173.2') 2" PVC Sch 80 Casing		(0.0 - 1.5') 5 bags Note: 2.5 x 2.5 ft concrete pad with 1 diameter lockable vault, King Kon-Crete 4000 PSI
2 _ 3 _ 4			(1.5 - 4.0') Portland Cement 6% Bentonite	(0.0 - 8.0') 12"	(1.5 - 4.0') 13.9 gallons	(1.5 - 4.0') 8 gallons (-42%) Note: Type I, II and V and Benseal
4 — 5 — 6 — 7 — 8 —		NR	(4.0 - 8.0') Bentoniteseal chips	Borehole	(4.0 - 8.0') 4.12 bags	(4.0 - 8.0') 15 bags (264%) Note: Puregold medium chips, little formation collapse, which moved casing to side of well, well checked no obstruction
	Topock - Fluvial Deposits	SW-SM	(9.5 - 10.5') Centralizer  (8.0 - 13.0') Portland Cement 3% Bentonite		(8.0 - 13.0') 19.8 gallons	(8.0 - 13.0') 70 gallons (254%) Note: Type I, II and V and Benseal
3 4 5 6		NR	(13.0 - 37.1') Portland Cement 3%	— (8.0 - 197.6') 10" Borehole	(13.0 - 37.1') 95.4	(13.0 - 37.1') 200 gallons (110%)
17 - 18 - 19	Deposits	sw-sm	Bentonite Bentonite		gallons	Note: Type I, II and V and Benseal
obreviations: U		101 14 1	cation System, ft = feet, bgs =	r≿\ = below ground surface.	amsl = above me	ean sea level, GW =
			· · · · · · · · · · · · · · · · · · ·	ry reporting limit, NR = I		
	= parts per bil	⊪on, ∪ = not	detected above the laborator	y reporting infint. I will - i	NO INCCOVCIV. DIG	c water table symbol

9ARC	Design & for natura built asse	Consultancy al and its	Well Const	ruction Log	5	Sheet: 2 of 11
Date Started:	03/20/2019		_Surface Elevation:	N/A	Well ID: N	MW-M-132, MW-M-193
Date Completed			_Shallow Well Elevation			
Drilling Co.:	Cascade		_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method:	Sonic Drilling		_Northing (NAD83):	N/A	Project: <u>Final</u>	GW Remedy Phase I
Driller Name:	Tyler Alymer		_Easting (NAD83):	N/A	Location: PG&E	Topock, Needles, California
Drilling Asst:	C. Winland/J.	. Candelaria	_Borehole Diameter:	4-12 inches		
Logger:	C. Bonessi/R	. Moniz	_Water Level Start:	44.85 ft bgs	Project Numbe	r: RC000753.0051
Editor:	Sean McGrar	ne	_Development End Date	e: <u>6/15/2019</u>		
Total Depth:	216 ft bgs		_Well Completion:			
Groundwa Sample I		USCS Code USCS Class	Well C	Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Fluvial Deposits	0,000000000000000000000000000000000000	(0.5 - 112.0') 2" PVC— Sch 80 Casing	—(0.6 - 173.2') 2" PVC Sch 80 Casing		
28	Topock - Fluvial Deposits	SW-SM	(13.0 - 37.1') Portland Cement 3% Bentonite  (34.5 - 35.5') Centralizer	(8.0 - 197.6') 10" Borehole	(13.0 - 37.1') 95.4 gallons	(13.0 - 37.1') 200 gallons (110%) Note: Type I, II and V and Benseal
CTON DETAILS, POSE TOPOCK CYLON DETAILS, POSE TO	Topock - Fluvial Deposits	SM	(37.1 - 46.0') — Bentonite seal chips		(37.1 - 46.0') 6.54 bags	(37.1 - 46.0') 24 bags (267%) Note: Puregold Medium Chips. Bentonite sinking into high solids grout.
⊋l∆hhreviations:	USCS = Unified	d Soil Classific	ation System ft = feet h	as = below ground surface	e_amsl = above me	ean sea level GW =

ARC <sup>4</sup>	DIS for natura built asse	Consultancy l and ts		Well Constru	uction Log	S	Sheet: 3 of 11
ate Started:	03/20/2019			_	I/A	Well ID: N	MW-M-132, MW-M-19
ate Completed				_Shallow Well Elevation: <u>N</u>			
illing Co.:	Cascade			•	I/A	Client: PG&E	
•	Sonic Drilling			• ,	I/A	•	GW Remedy Phase I
er Name:	Tyler Alymer			<b>O</b> ( ,	I/A	Location: <u>PG&amp;E</u>	Topock, Needles, Californ
ng Asst:	C. Winland/J.	Cande	elaria	_Borehole Diameter: 4	-12 inches		
ger:	C. Bonessi/R	. Moniz		_Water Level Start: 4	4.85 ft bgs	Project Number	r: RC000753.0051
or:	Sean McGrar	ne		_Development End Date: 6			
al Depth:	216 ft bgs			_Well Completion:	⊠ Flush Stick-up		
Groundwa Sample II		USCS	USCS	Well Con	struction	Calculated Material Volumes	Material Volumes Installed
	Topock - Fluvial Deposits	SM		(0.5 - 112.0') 2" PVC— Sch 80 Casing	—(0.6 - 173.2') 2" PVC Sch 80 Casing		
- - - - - -	Topock - Alluvium Deposits	GM		(37.1 - 46.0') Bentonite seal chips		(37.1 - 46.0') 6.54 bags	(37.1 - 46.0') 24 bags (267%) Note: Puregold Medium Chips. Bentonite sinking into high solids grout.
	Topock - Alluvium Deposits	GM			(8.0 - 197.6') 10" Borehole		
MW-M-VAS 52-57 (28 ppb) 3/28/2019 11:10		GW		(46.0 - 94.3') High Solids Grout		(46.0 - 94.3') 191.2 gallons	(46.0 - 94.3') 228 gallons (19%) Note: Aqua Guard Bentonite Grout
	Topock - Alluvium Deposits	SM					
	JSCS = Unifie			ation System, ft = feet, bgs			
				detected above the laborat			
		aurad i	nost day	velopment			

Well Construction Log	`	Sheet: 4 of 11
Surface Elevation: N/A	Well ID: N	MW-M-132, MW-M-193
Shallow Well Elevation: <u>N/A</u>	_	
Deep Well Elevation: <u>N/A</u>	_ Client: PG&E	
Northing (NAD83): N/A	-	GW Remedy Phase I
Easting (NAD83): N/A	_ Location: <u>PG&amp;</u> E	<u> Topock, Needles, California</u>
Borehole Diameter: 4-12 inches		
Water Level Start: 44.85 ft bgs	_ Project Numbe	r: <u>RC000753.0051</u>
Development End Date: 6/15/2019	_	
Well Completion: X Flush Stick-up		
Well Construction	Calculated Material Volumes	Material Volumes Installed
(0.5 - 112.0') 2" PVC————————————————————————————————————	•	
	2	
(64.5 - 65.5') Centralizer	6/	9
(46.0 - 94.3') High Solids Grout (8.0 - 197.6') 10" Borehole	(46.0 - 94.3') 191.2 gallons	(46.0 - 94.3') 228 gallons (19%) Note: Aqua Guard Bentonite Grout
<u> </u>	lo Recovery, blu	e water table symbol
		cation System, ft = feet, bgs = below ground surface, amsl = above metaletected above the laboratory reporting limit, NR = No Recovery, bluevelopment

9/	<b>ARCA</b>	DIS Design & for natur built asso	Consultancy al and ets		Well Const	ruction Log	\$	Sheet: 5 of 11
Date S	Started:	03/20/2019			_Surface Elevation:	N/A	Well ID: I	MW-M-132, MW-M-193
Date (	Completed	07/30/2019			_Shallow Well Elevation	: <u>N/A</u>		
Drilling	g Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	<b>=</b>
Drilling	g Method:	Sonic Drilling	<u> </u>		_Northing (NAD83):	N/A	Project: Final	GW Remedy Phase I
Driller	Name:	Tyler Alymer			_Easting (NAD83):	N/A	Location: PG&I	<u> Topock, Needles, California</u>
Drilling	g Asst:	C. Winland/J	. Cande	laria	_Borehole Diameter:	4-12 inches		
Logge	er:	C. Bonessi/R	R. Moniz		_Water Level Start:	44.85 ft bgs	Project Numbe	r: RC000753.0051
Editor		Sean McGra	ne		_Development End Date	e: <u>6/15/2019</u>		
Total I	Depth:	216 ft bgs			_Well Completion:			
Depth (ft)	Groundwate Sample ID		Sode	USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
81 81 82		Topock - Alluvium Deposits	ML		(0.5 - 112.0') 2" PVC— Sch 80 Casing	—(0.6 - 173.2') 2" PVC Sch 80 Casing		
83 84		Topock - Alluvium Deposits	GW-GM					
84		Topock - Alluvium Deposits	SM		(46.0 - 94.3') High Solids Grout	(8.0 - 197.6') 10" Borehole	(46.0 - 94.3') 191.2 gallons	(46.0 - 94.3') 228 gallons (19%) Note: Aqua Guard Bentonite Grout
95 96		Topock - Alluvium Deposits	ML		(94.3 - 96.3') Cemex #3 MESH (8x10)		(94.3 - 96.3') 2.1 bags	(94.3 - 96.3') 6 bags (186%) Note: Lapis Lustre Sand, drillers were concerned about bentonite swelling in casing overnight placed sand in casin and open borehole, sand filled void
97 98 99		Topock - Alluvium Deposits	SM		(96.3 - 106.9') Bentonite seal pellets		(96.3 - 106.9') 9 buckets	(96.3 - 106.9') 9.5 buckets (6%) Note: Pel-Plug (TR30) 3/8"
100	-				(99.5 - 100.5') Centralizer			
	viations: I	JSCS = Unifie	d Soil C	lassific		gs = below ground surfa	ce_amsl = above m	ean sea level GW =

<b>ARC</b>	Design & for natura built asset	Consultancy al and ets	Well Const	ruction Log	5	Sheet: 6 of 11
Date Started:	03/20/2019		Surface Elevation:	N/A	Well ID: N	MW-M-132, MW-M-193
Date Completed	d: <u>07/30/2019</u>		Shallow Well Elevation	: <u>N/A</u>		
Drilling Co.:	<u>Cascade</u>		Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method:	Sonic Drilling		Northing (NAD83):	N/A	•	GW Remedy Phase I
Driller Name:	Tyler Alymer		Easting (NAD83):	N/A	Location: PG&E	<u> Topock, Needles, California</u>
Drilling Asst:	C. Winland/J	<u>. Candelaria</u>	Borehole Diameter:	4-12 inches		
Logger:	C. Bonessi/R	. Moniz	Water Level Start:	44.85 ft bgs	Project Numbe	r: RC000753.0051
Editor:	Sean McGrai	ne	Development End Date	e: <u>6/15/2019</u>	<u></u>	
Total Depth:	216 ft bgs		Well Completion:			
Groundwa Sample I		USCS Code USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	ML 0000		—(0.6 - 173.2') 2" PVC Sch 80 Casing	(96.3 - 106.9') 9	(96.3 - 106.9') 9.5 buckets (6%)
061-00-00-00-00-00-00-00-00-00-00-00-00-00	Topock - Alluvium Deposits	SM	(96.3 - 106.9') Bentonite seal pellets		buckets	Note: Pel-Plug (TR30) 3/8"
106 Harian 106 Harian 107 Harian					(6)	
D	J Topock -	SM		(8.0 - 197.6') 10" Borehole		
98			(112.0 - 132.0') 2" — Sch 80 PVC (20-slot) Screen  (106.9 - 136.0') Cemex #3 MESH — (8x10)		(106.9 - 136.0') 30.2 bags	(106.9 - 136.0') 35 bags (16%) Note: Lapis Lustre Sand
Designation of the control of the co	Topock - Alluvium Deposits	M M M M M M M M M M M M M M M M M M M				
Abbreviations:	USCS = Unifie	d Soil Classif	ication System, ft = feet, h	ngs = below ground surfac	e amsl = ahove me	ean sea level GW =

9/	<b>ARCA</b>	DIS Design for nat built a	n & Consultancy cural and ssets		Well Construction Log	8	Sheet: 7 of 11
	Started:	03/20/2019			Surface Elevation: <u>N/A</u>	Well ID: N	//W-M-132, MW-M-193
	-	: <u>07/30/2019</u>			_Shallow Well Elevation: <u>N/A</u>		
Drilling	-	Cascade			_Deep Well Elevation: <u>N/A</u>	Client: PG&E	
Drilling	g Method:	Sonic Drillin	g		_Northing (NAD83): N/A	Project: <u>Final (</u>	GW Remedy Phase I
Driller	Name:	Tyler Alyme	r		_Easting (NAD83): N/A	Location: PG&E	Topock, Needles, California
Drilling	g Asst:	C. Winland	J. Cande	elaria	Borehole Diameter: 4-12 inches		
Logge	er:	C. Bonessi/	R. Moniz		_Water Level Start: 44.85 ft bgs	Project Number	r: RC000753.0051
Editor	:	Sean McGr	ane		_Development End Date: 6/15/2019		
Total I	Depth:	216 ft bgs			_Well Completion: X Flush Stick-	up	
Depth (ft)	Groundwat Sample II		USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits	GM		(112.0 - 132.0') 2" —	" PVC ing	
123 		Topock - Alluvium Deposits	SM				
125 126 127		Topock - Alluvium Deposits	GW-GM			6/	
					(106.9 - 136.0') Cemex #3 MESH (8x10) (8.0 - 197.6') Borehole	(106.9 - 136.0') 30.2 bags	(106.9 - 136.0') 35 bags (16%) Note: Lapis Lustre Sand
132 133  134		Topock - Alluvium Deposits	GM		(132.5 - 133.5') — (132.0 - 134.4') — Sump and End Cap		
135	-			12 PK 3			
	1			PD 1			
136	-						
137 138 139					(136.0 - 163.0') Bentonite seal pellets	(136.0 - 163.0') 23.8 buckets	(136.0 - 163.0') 25 buckets (5%) Note: Pel-Plug (TR30) 3/8"
	viations: I	ISCS = Unifi	ed Soil C	lassifica	ation System. ft = feet. bas = below around s	surface amsl = above me	ean sea level GW =

Date Started:	9/	ARCA	DIS Design & for natura built asse	Consultancy I and ts		Well Const	ruction Log		Sheet: 8 of 11		
Sale   Completed   March   Completed   C						_Surface Elevation:	N/A	Well ID:	MW-M-132 MW-M-193		
Deliting Nathool:   Sonic Diffing   Morthing (NADB3)   N/A		-				_Shallow Well Elevation:					
Driller   American   Typer Almer   C. Bonessir   Market   C. Bonessir   Market	Drilling	J Co.:	Cascade			_Deep Well Elevation:					
Dolling Asst: C. Winlands/J. Candelaria   Borehole Diameter: 4-12 (Debes Cogner: C. Decessity Moniz   Wart Level Start   44.85.ft lbgs   Project Number: RC000753.0051	Drilling	Method:	Sonic Drilling					Project: <u>Final</u>	GW Remedy Phase I		
Care	Driller	Name:				_Easting (NAD83):	N/A	Location: PG&	E Topock, Needles, California		
Sear McGrane	Drilling	j Asst:					4-12 inches				
Total   Depth:   216 ft bgs							-	•			
## Cannel Committed Commit	Editor:		Sean McGrar	ne							
141	Total D	Depth:				_Well Completion:		1			
141	Depth (ft)		Geologic Formation	USCS Code	USCS Class	Well C		Material Volumes			
	141	147-152 (<0.17 U ppb 3/31/2019	Topock - Alluvium Deposits  Topock - Alluvium Deposits  Topock - Alluvium Deposits	GM ML		(136.0 - 163.0') Bentonite seal pellets	Sch 80 Casing	(136.0 - 163.0') 23.8			
	 160										

AR	CAD	Design & for natura built asse	Consultancy Il and ts		Well Const	ruction Log	S	Sheet: 9 of 11
Date Starte		/20/2019			_Surface Elevation:	N/A	Well ID: N	лw-м-132, мw-м-193
Date Comp					_Shallow Well Elevation			·
Drilling Co.		ascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Met		_			_Northing (NAD83):	N/A	-	GW Remedy Phase I
Driller Nam	•	<u>ler Alymer</u>			_Easting (NAD83):	N/A	Location: <u>PG&amp;E</u>	Topock, Needles, California
Drilling Ass	t: <u>C.</u>	Winland/J.	Cande	elaria	_Borehole Diameter:	4-12 inches		
Logger:	<u>C.</u>	Bonessi/R	<u>. Moniz</u>	<u>-</u>	_Water Level Start:	44.85 ft bgs	Project Number	r: RC000753.0051
Editor:		ean McGrar	ne		_Development End Date	: <u>6/15/2019</u>		
Total Depth	ı: <u>21</u>	6 ft bgs	ı		_Well Completion:			
	undwater mple ID	Geologic Formation	USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
161 162 163		Topock -			(136.0 - 163.0') — Bentonite seal pellets	—(0.6 - 173.2') 2" PVC Sch 80 Casing	(136.0 - 163.0') 23.8 buckets	(136.0 - 163.0') 25 buckets (5%) Note: Pel-Plug (TR30) 3/8"
164 165 166		Alluvium Deposits	GM				6	
167 168 169 170		Topock - Alluvium Deposits	SM			(8.0 - 197.6') 10" Borehole	8	
172 (<0. p 175_ 4/2	M-VAS- 2-177 2-133 U pb) /2019 4:57	Topock - Alluvium Deposits	GM		(163.0 - 197.6') Cemex #3 MESH (8x10)	(173.2 - 193.2') 2" Sch 80 PVC (20-slot) Screen	(163.0 - 197.6') 38.2 bags	(163.0 - 197.6') 42 bags (10%) Note: Lapis Lustre Sand
		Topock - Alluvium Deposits	GM			as = below ground surface		

	DIS Design & for natura built asse	Consultancy Il and ts	Well Construct	tion Log	Sh	neet: 10 of 11
Date Started:	03/20/2019		Surface Elevation: N/A		Well ID: M	W-M-132, MW-M-193
Date Completed	l: <u>07/30/2019</u>		Shallow Well Elevation: <u>N/A</u>			
Drilling Co.:	<u>Cascade</u>		Deep Well Elevation: <u>N/A</u>		Client: PG&E	
Drilling Method:	Sonic Drilling		Northing (NAD83): N/A_		Project: Final G	W Remedy Phase I
Driller Name:	Tyler Alymer		Easting (NAD83): N/A_		Location: PG&E	Topock, Needles, California
Drilling Asst:	C. Winland/J.	Candelaria	Borehole Diameter: 4-12	inches		
Logger:	C. Bonessi/R	. Moniz	Water Level Start: 44.8	5 ft bgs	Project Number:	RC000753.0051
Editor:	Sean McGrar	ne	Development End Date: <u>6/15</u>	/2019		
Total Depth:	216 ft bgs			Flush⊡ Stick-up		
Groundwa Sample I		USCS Code USCS Class	Well Construc	tion	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	(163.0 - 197.6') Cemex #3 MESH (8x10)	(173.2 - 193.2") 2" Sch 80 PVC (20-slot) Screen  (8.0 - 197.6") 10" Borehole	(163.0 - 197.6') 38.2 bags	(163.0 - 197.6') 42 bags (10%) Note: Lapis Lustre Sand
	b)	GM SM GM	(193.7 - 194.7') — Centralizer	(193.2 - 195.5') Sump and End Cap	(197.6 - 209.5') 3.4	(197.6 - 209.5') 3 bags (-12%)
199			(197.6 - 209.5') — Bentonite seal chips	(197.6 - 211.0') 6" Borehole	(197.6 - 209.5') 3.4 bags	Note: Halliburton Holeplug 3/8", during reaming drilled out 0.6 ft of seal
- 7		[ Lu/12				

9/	ARCA	DIS Design & for natur built asso	Consultancy al and ets		Well Const	ruction Log		Sheet: 11 of 11
	Started:	03/20/2019			_Surface Elevation:	N/A	Well ID:	MW-M-132, MW-M-193
	-	07/30/2019			_Shallow Well Elevation			•
Drilling	-	Cascade			_Deep Well Elevation:	N/A	Client: PG&	
	-	Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase I
		Tyler Alymer			_Easting (NAD83):	N/A	Location: <u>PG&amp;</u>	E Topock, Needles, California
1	g Asst:	C. Winland/J			_Borehole Diameter:	4-12 inches	<del></del> <del></del>	
Logge		C. Bonessi/R		<u>z</u>	_Water Level Start:	44.85 ft bgs	Project Numbe	er: RC000753.0051
Editor		Sean McGra	ne		_Development End Date			
Total I	Depth:	216 ft bgs			_Well Completion:			
Depth (ft)	Groundwate Sample ID		Code	USCS Class	Well C	Construction	Calculated Material Volumes	Material Volumes Installed
201	no sample- (Interval did not produce: 4/10/2019 12:28	Topock -	GM		(197.6 - 209.5') Bentonite seal chips		(197.6 - 209.5') 3.4 bags	(197.6 - 209.5') 3 bags (-12%) Note: Halliburton Holeplug 3/8", during reaming drilled out 0.6 ft of seal
206 207 		Topock - Bedrock - metadiorite	GM			— (197.6 - 211.0') 6" Borehole	961	
209 210								
_211_								
<u> </u>								
_212_		Topock - Bedrock -						
L _		metadiorite					(	(
_213					(209.5 - 216.0') Bentonite seal pellets		(209.5 - 216.0') 1.2 buckets	(209.5 - 216.0') 1 buckets (-17%) Note: Pel-Plug (TR30) 3/8"
						(211.0 - 216.0') 4"		
_214						Borehole		
215								
215								
<b>-</b> -								
216			ļ	K///XI	End of Boring at			
	-				216.0 'bgs.			
217								
<u> </u>	-							
_218_								
  -								
_219_								
L _								
220								
Abbre	viations: L	JSCS = Unifie	d Soil (	Classific	ation System, ft = feet, b	ogs = below ground surfa	ce, amsl = above m	nean sea level, GW =
					· · · · · · · · · · · · · · · · · · ·	ratory reporting limit. NR		

groundwater, ppb = parts per billion, U = not detected an represents depth to water measured post development

9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	g		She	et: 1 of	11
Date S	started	: 03/20/2	2019		Surface	Elevation:	N/A	Borin	ua No .	MW-Md	
		ted: <u>04/30/</u> 2			Northing	g (NAD83):	N/A	_		10100 1010	
Drilling		Casca			_	(NAD83):	N/A	_ Client:	PG&E		
Drilling			•		Total De	-	216 ft bgs	_ Project:		N Remedy Ph	
Drill Ri							4-12 inches	_ Location	: <u>PG&amp;E T</u>	opock, Needle	<u>es, California</u>
Driller		•			-		: 44.85 ft bgs	-			
Drilling			land/J. Cand			ig Method:	4 inch x 10 ft. Core Barrel	_ Project N	lumber: <u>F</u>	RC000753.005	51
Logge			essi/R.Moniz/		-	-	Continuous	-			
Editor:		Sean N	<u>/////////////////////////////////////</u>		Convert	ed to Well:	X Yes    □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
1 _ 2 _ 3 _ 4 _ 5 _ 6 _ 7 _ 8	0				NR	foot bo	3.0") (NR); Hand cleared for utility clearan ulder encontered had to used rig to break bgs with no core collected, no recovery	s boulder loose	e, drilled	(0.0 - 8.0') Added 10 gallons of water to hydrate bentonite mud tub seal.	(0.0 - 37.0") No water used
- 9 11 12 14 16 17 - 17 - 17 - 17 - 17	24	No Sieve Samples Collected		Topock - Fluvial Deposits	SW-SM	gravel coarse pebble subrou hydrati	10.5') Topock - Fluvial Deposits; Well gra (SW-SM); light olive brown (2.5Y 5/4); ve grained, subangular to subround; some s, subangular to subround; trace cobbles nd; trace silt; trace clay; dry; some moist on of bentonite  17.0') (NR); No recovery.	ery fine graine granules to ve , subangular t	d to very ry large o	(8.0 - 32.0') Soft drilling, formation collapsing after every run	
17 18 19	120			Topock - Fluvial Deposits	SW-SM	gravel coarse pebble subrou hydrati	19.5') Topock - Fluvial Deposits; Well gr (SW-SM); light olive brown (2.5Y 5/4); ve grained, subangular to subround; some s, subangular to subround; trace cobbles ind; trace silt; trace clay; dry; some moisti on of bentonite	ery fine graine granules to ve , subangular t ure present du	d to very ery large o ue to		
20					GW-GM	(19.5 -	27.0') Topock - Fluvial Deposits; Well gr	aded gravel w	ith silt		
	/iation	s: USCS =	Unified Soil C	Classificati			bgs = below ground surface,	amsl = abo	ove mear	sea level, G\	N =

9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9		She	eet: 2 of	11
Date S	Started	: 03/20/2	<u>2</u> 019		Surface	Elevat	ion:	N/A	Borir	na No.:	MW-Md	
	•	eted: 04/30/2			Northin			N/A			<u></u>	
Drilling		Cascad			Easting	•	33):	N/A	Client:	PG&E		
Drilling	•		•		Total D	•			Project:		W Remedy Ph	
Drill Ri				<u>ck iviount</u>				4-12 inches 44.85 ft bgs	Location	: PG&E	Topock, Needle	es, California
Drilling		•	land/J. Cand	elaria	Sampli			4 inch x 10 ft. Core Barrel	Project N	Jumher:	RC000753 009	 51
Logge	•		essi/R.Moniz/					Continuous	1 10,0001	tarribor.	1.0000100.000	<u> </u>
Editor:			1cGrane		Conver	-						
	>			o 5								
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
21	120			Topock - Fluvial Deposits	GW-GM		large pe grained subrour	nd (GW-GM); light olive brown (2.5Y 5/4); abbles, subangular to subround; some veil sand, subangular to subround; trace cobind; trace silt; trace clay; dry	y fine to very bles, subanc	y coarse jular to	(8.0 - 32.0') Soft drilling, formation collapsing after every run	(0.0 - 37.0') No water used
28 28 30 31 31	60	No Sieve Samples Collected		<b>S</b>			gravel (coarse pebbles to subro	38.0') Topock - Fluvial Deposits; Well gra SW-SM); light olive brown (2.5Y 5/4); ver grained, subangular to subround; some g s, subangular to subround; little silt; trace bound; dry	ry fine graine ranules to ve	d to very ery large		
33 34 35 36	60			Topock - Fluvial Deposits	SW-SM		(32'); iro	on oxide staining; ~2 ft. diameter boulder			(32.0 - 37.0') Hard drilling, due to boulder, borehole collapsing after each clean out run. rod broke while doing clean out at 35 ft bgs	
37	60			Topock - Fluvial Deposits	SM		strong tangular to suba cement sandsto	42.0') Topock - Fluvial Deposits; Silty sar brown (7.5YR 5/6); very fine grained to ve to subangular; some granules to very lar ngular; some silt; little cobbles, subangula ation; iron oxide staining; cobbles compos one/breccia	ery coarse grage pebbles, a ar; dry to moi sed of	ained, angular st; weak	(37.0 - 42.0') Drill rods chattering, change geologist from CB to RM (37.1') Change in geologist from CB to RM.	(37.0') 5 gallons of water used; 5 gallons of water recovered; 0 gallons of water lost (37.0 - 205.0') No used
								bgs = below ground surface, a				
around	dwater	. ppb = parts	per billion. L	J = not de	tected a	above th	ne labo	oratory reporting limit, NR = No	Recover	rv blue v	vater table svr	nbol

groundwater, ppb = parts per billion, U = not detected above t represents depth to water measured during first VAS interval

<b>-</b> /-	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Boring Lo	g		She	eet: 3 of	11
	tarted:		2019		Surface Elevation:	N/A	Borin	a No.:	MW-Md	
		ted: <u>04/30/</u>			Northing (NAD83):	N/A				
rilling	Co.:	<u>Casca</u>	de	[	Easting (NAD83):	<u>N/A</u> (		PG&E		
rilling	Metho	od: <u>Sonic</u>	Drilling		Total Depth:	216 ft bgs F	Project:	Final G	W Remedy Ph	ase 1
rill Ri	д Туре	e: <u>Borat I</u>	Longyear Tra	ick Mount 1	Borehole Diameter	4-12 inches L	_ocation:	PG&E 1	<u> Fopock, Needle</u>	es, Californi
riller	Name:	<u>Tyler A</u>	Alymer	[	Depth to First Wate	er: <u>44.85 ft bgs</u>				
rilling	Asst:	C. Win	nland/J. Cand	delaria S	Sampling Method:	4 inch x 10 ft. Core Barrel F	Project N	umber: J	RC000753.005	51
oggei	r:	C.Bone	essi/R.Moniz	/D.Maurer S	Sampling Interval:	Continuous				
ditor:		<u>Sean N</u>	<u> McGrane</u>	(	Converted to Well:					
_	gr.y			igic Ion	(0,0)					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Soil Description			Drilling Notes	Drilling Fluid
									(37.0 - 42.0') Drill rods	(37.0 - 205.0') No used
.41_	60			Topock - Fluvial	SM				chattering, change geologist	
				Deposits					from CB to RM	
42_										
					(42.0 stron	- 47.0') Topock - Alluvium Deposits; Silty gra g brown (7.5YR 5/6); granules to very large po	ebbles and	d (GM);		
٦ ٦					Dara suba	ngular; some very fine to very coarse grained	sand, angul	ar to		
43					subr	ound; little cobbles; little silt; moist; weak cemeng; Interbedded silty units, cobbles composed	entation; iron	oxide		
. 1						stone/breccia				
44_				Topock -					(44.0 - 47.0')	
-				Alluvium	GM 6	<b>~ ~ ~ ~ ~ ~ ~ .</b>			Drill rods	
45_				Deposits	Para				chattering	
					L HAD					
46					S.P.I.d					
					100					
47_					k 017					
+′ —				<b></b>		- 52.0') Topock - Alluvium Deposits; Silty gra				
-					dark	vellowish brown (10YR 4/4); granules to very ar to subround; some silt; little cobbles; little v	large pebble	s,		
8_					grain	ed sand, angular to subround; little clay; mois	t to wet	.Suiditi	(48.0')	
_									Approximate	
9_					Pola				depth to water table	
_[				Topock - Alluvium	GM P					
50		No Sieve		Deposits						
		Samples Collected			100					
., T										
51_			•	KJ		prown (7.5YR 5/4); little silt; trace clay; moist;				
-					iron	xide st <mark>ainin</mark> g; increase in granules and pebble	es, decrease	in		
2_	120					- 59.0') Topock - Alluvium Deposits; Well gra	aded aravel v	vith	(52.0 - 57.0')	
4					sand	(GW); strong brown (7.5YR 5/6); granules to	very large p	ebbles,	` Drill rods ´	
53_					anguangu	ar to subround; some very fine to very coarse ar to subround; little cobbles; trace silt; wet; w	e grained sar veak cement	nd, ation;	chattering, driller suggest water	
						xide staining			table has been encountered	
54_			MW-M-VAS-						encountered	
			52-57							
<u>,</u>			(28 ppb) 3/28/2019							
55_			11:10	Topock -						
-				Alluvium	GW					
56				Deposits						
57										
									(57.0 - 67.0') Hard drilling and	
58					[.6.7]				became harder	
JU					(58')	moist			at 61ft	
_	114									
59				Topodr	(50 (	- 61.0') Topock - Alluvium Deposits; Silty sar	nd with arave	el (SM)·		
JJ				Topock -					1 1	
-				Alluvium Deposits	SM Sm	sh brown (10YR 5/2), very fine grained to med tle granules to very large pebbles, angular to	ululli grailleu	, some		

9	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	S	Sheet: 4 of	11
	Started				Surface		•	Boring No	.: <u>MW-Md</u>	
	-		2019			- '				
Drilling	-	<u>Casca</u>			_	•	· ·	Client: PG&E		
_	g Metho		<u>Drilling</u>			•	216 ft bgs	•	•	
	ig Type						eter: 4-12 inches	Location: PG&	<u>E Topock, Needle</u>	es, California
	Name:	•	Alymer		•		Water: 44.85 ft bgs		D0000750.005	- 4
•	g Asst:		nland/J. Cand		Samplir	-		Project Number	r: <u>RC000753.005</u>	)1
Logge			essi/R.Moniz/ McGrane		•	•				
Editor:		<u>Sean i</u>	T		Conver	Ted to t	veli. A res I no		1 1	
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 61				Topock - Alluvium Deposits	SM		clay; trace cobbles, angular to subround; moist		(57.0 - 67.0') Hard drilling and became harder at 61ft	(37.0 - 205.0') No used
62 63				Topock - Alluvium Deposits	GM		(61.0 - 63.0') Topock - Alluvium Deposits; Silty g light brownish gray / pale yellowish brown(10YR large pebbles, subangular to subround; little very grained sand, subangular to subround; little silt; t	6/2); granules to very fine to medium		
63  64	114					0	(63.0 - 67.0") Topock - Alluvium Deposits; Sitty s (7.5YR 4/3); very fine grained to medium grained subround; little granules to very large pebbles, ar little silt; trace cobbles, angular to subround; trace cementation; iron oxide staining	d, angular to ngular to subround;	9	
65 _ 65 _ 66				Topock - Alluvium Deposits	SM		(65'); potential caliche deposits in sediments	0		
67							(67.0 - 75.0') Topock - Alluvium Deposits; Silty g	gravel with sand (GM);	(67.0 - 77.0')	
 68  69							brown (7.5YR 4/3); granules to very large pebble subround; some cobbles, angular to subround; some cobbles, angular to subround; little some grained sand, angular to subround; little some subround;	es, angular to ome very fine to very	Softer drilling	
 70 		No Sieve Samples Collected		Topock -	2		(69.5') brown (10YR 5/3); some silt; little cobbles subround; little clay; moist; weak cementation (70.5'); dry; potential caliche deposits in sedimen			
71  72	120			Alluvium Deposits	GM		(71'); moist  (72'); wet; lens of green staining			
 73 					C					
74  75			MW-M-VAS- 72-77 (<0.033 U ppb) 3/29/2019 14:01				(75.0 - 78.0') Topock - Alluvium Deposits; Well g	wroded cond with		
 76  77			14.01	Topock - Alluvium Deposits	SW-SM		gravel (SW-SM); weak red (2.5YR 5/2); very fine grained, angular to subround; little granules to ve angular to subround; little silt; trace cobbles, angular to subround; little silt; trace sil	e grained to coarse ery large pebbles,	(77.0 - 87.0')	
 78	400			Topock -	611		(78.0 - 79.0') Topock - Alluvium Deposits; Silty g weak red (2.5YR 4/2); granules to very large peb		Soft drilling, lost core 82 to 87 ft	
79	120			Alluvium Deposits Topock -	GM SW SM		subround, little cobbles, angular to subround, little coarse grained sand, angular to subround, little s (79.0 - 80.0') Topock - Alluvium Deposits; Poorly	e very fine to very silt; little clay; wet graded sand with silt		
 80				Alluvium Deposits	SW-SM		and gravel (SW-SM); weak red (2.5YR 5/2); med coarse grained, angular to subround; and granule	dium grained to very es to very large		
	viation	s: USCS =	Unified Soil C	Classification	on Syste	em, ft =	feet, bgs = below ground surface, a		ean sea level, G\	N =

9/-	\R(	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 5 of	11
Date S	Started	: 03/20/	2019		Surface	Eleva	tion: N/A	Borin	a No.:	MW-Md	
	•	eted: <u>04/30/</u>			Northing		•			<u> </u>	
Drilling	g Co.:	<u>Casca</u>			Easting	(NAD	33): <u>N/A</u>	Client:	PG&E		
Drilling	y Meth	od: <u>Sonic</u>	Drilling		Total De	epth:	216 ft bgs	Project:	Final G	N Remedy Ph	ase 1
Drill Ri	ig Туре	e: <u>Borat l</u>	Longyear Tra	ck Mount	Borehol	e Dian	neter: 4-12 inches	Location:	PG&E 1	opock, Needle	es, California
Driller	Name	•	-		Depth to	o First	Water: <u>44.85 ft bgs</u>				
Drilling	J Asst:	C. Wir	<u>ıland/J. Cand</u>	elaria	Samplin	ng Metl	nod: 4 inch x 10 ft. Core Barrel	Project N	lumber: [	RC000753.005	51
Logge	r:	C.Bon	<u>essi/R.Moniz/</u>	<u>/D.Maurer</u>	Samplin	ng Inte					
Editor:		<u>Sean I</u>	<u> McGrane</u>		Convert	ted to \	Well: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
					-		pebbles, angular to subround; little silt; trace cobl	bles angular	to	(77.0 - 87.0')	(37.0 - 205.0')
				T			subangular; wet		/	Soft drilling, lost	No used
81				Topock - Alluvium	ML		(80.0 - 82.0') Topock - Alluvium Deposits; Sandy brown (7.5YR 4/3); low plasticity; some very fine	/ silt with grav to medium gr	el (ML); ained	core 82 to 87 ft downhole	
<u> </u>				Deposits			sand, angular to subround; little granules to very angular to subangular; little clay; moist to wet; me	large pebbles			
82											
							(82.0 - 84.0') Topock - Alluvium Deposits; Well g and sand (GW-GM); weak red (2.5YR 5/2); gran	ules to very la	arge		
83				Topock - Alluvium	GW-GM		pebbles, angular to subround; some medium to v sand, angular to subround; little cobbles, angular	ery coarse gr	ained		
	400			Deposits	GW-GW		silt; wet	to subariguia	ar, mue		
84	120										
							(84.0 - 95.0') Topock - Alluvium Deposits; Silty s brown (7.5YR 4/3); medium grained to very coars				
							subround; some granules to very large pebbles, a	angular to sul	oround;		
65							some silt; little cobbles, angular to subround; trac interbedded with layers of silty gravel, with sand a			•	
							sand				
86											
87										(87.0 - 97.0')	
				4						Soft drilling,	
88										recovered 82 to 87 ft core	
89											
				Topock -	SM						
90		No Sieve	_	Alluvium Deposits	SIVI						
		Samples Collected					, 6/1				
91			•								
92	120						(91.7'); dry; with lenses of potential caliche in sec cementation	diments and v	veak		
93											
94											
95											
							(95.0 - 97.0') Topock - Alluvium Deposits; Sandy	silt with grav	el (ML);		
				Topock -		1998	brown (7.5YR 4/3); low plasticity; some medium to grained sand, angular to subround; little granules	s to very large	:		
96				Alluvium Deposits	ML	4 4	pebbles, angular to subround; little cobbles, and to subround; little cobbles	ular to subrou	nd; trace		
├ <u>-</u> ┤						699					
97					+	[a  0	(97.0 - 100.0') Topock - Alluvium Deposits; Silty	sand with gra	ivel		
┝╶┤							(SM); brown (7.5YR 4/3); medium grained to very angular to subround; some granules to very large	y coarse grair	ned,		
98							subround; some silt; trace cobbles, angular to su	bround; trace	clay;		
<u> </u>	120			Topock - Alluvium	SM		moist; interbedded with layers of silty gravel with with sand	sand and gra	velly silt		
99				Deposits							
L											
100											
Abbrev	viation	s: USCS =	Unified Soil C	Classificati	on Syste	em, ft =	feet, bgs = below ground surface, a	amsl = abo	ove mear	n sea level, G\	N =

AR	CADIS	Design & Consultancy for natural and built assets		Boring	g Log	She	eet: 6 of	11
Date Started				Surface Elev		Boring No.:	MW-Md	
-	eted: <u>04/30/</u>			Northing (NA	•			
Drilling Co.:	<u>Casca</u>			Easting (NAI	,	Client: PG&E	M/ D Db	1
Drilling Meth		<u>Drilling</u> Longyear Tra		•	•	-	W Remedy Ph	
Drill Rig Typ Driller Name		<u>Longyear fra</u> Alymer			st Water: 44.85 ft bgs	Location. PG&E	ropock, needi	es, Callionia
Drilling Asst		nland/J. Cand				Project Number:	RC000753.005	51
Logger:		essi/R.Moniz						•
Editor:		<u>McGrane</u>		Converted to				
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS	Soil Description		Drilling Notes	Drilling Fluid
			Topock - Alluvium Deposits	ML ML	(100.0 - 103.5') Topock - Alluvium Deposits; San (ML); brown (7.5YR 4/3); low plasticity; some ver grained sand, angular to subround; little granules pebbles, angular to subround; trace cobbles, angular to subround; iron oxide st (101'); dry; with lens of potential caliche in sedime cementation	y fine to medium to very large ular to subround; aining	(97.0 - 127.0') Formation collapse during clean out drilling with 10 inch casing, soft drilling (97' to 107'), slightly rough drilling (107' to 109'), soft drilling (109' to 117'), soft drilling lost 5 feet	(37.0 - 205.0') No used
_104			Topock - Alluvium Deposits	SM	(103.5 - 105.0') Topock - Alluvium Deposits; Sitty (SM); grayish brown (2.57 5/2) and brown (7.57F); grained to very coarse grained; little granules to vulture angular to subround; little sitt; trace cobbles, angular to subround; little sitt; trace cobbles, angular to subround; little sitt; trace changes	R 4/3); medium very large pebbles,	of sample downhole (117' to 127') with 6 inch casing	
_105_  _106_  _107_					(104'); to 104.5', wet silty gravel lens (105.0 - 114.5') Topock - Alluvium Deposits; Silty (SM); brown (7.5YR 4/3); medium grained to very angular to subround; some granules to very large subround; some silt; trace cobbles, angular to sub moist; interbedded layers with poor to moderate g (106'); to 107', dry with green staining	y coarse grained, e pebbles, angular to bround; trace clay;	(107.0") During	
	No Sieve Samples Collected	MW-M-VAS- 107-112 (<0.033 U ppb) 3/30/2019 13:59	Topock - Alluvium Deposits	SM	(107'); to 109.5', wet		(107.0') During reaming with 10-inch casing flapper bit broke, getting poor recovery, driller thinks material is getting pushed into formation or falling down 6-inch rathole	
_113_  _114_								
 _115_  _116_ 					(114.5 - 122.0') Topock - Alluvium Deposits; Silty (GM); brown (7.5YR 4/3); granules to very large purposubround; some very fine to medium grained san subangular; some silt; little cobbles, angular to su moist; green staining	pebbles, angular to id, angular to		
_117	1		Topock - Alluvium	GM &				
			Deposits	S 2000 €	(118.2'); sand lens at 118.2 ft			
120				Polo				
Abbreviatior	ns: USCS =	Unified Soil (	Classificatio	n System, f	t = feet, bgs = below ground surface, a	msl = above mea	n sea level, G\	N =

	CADIS	Design & Consultancy for natural and built assets		Boring Log	She	et: 7 of	11
ate Starte				Surface Elevation: N/A	Boring No.:	MW-Md	
-		2019		Northing (NAD83): N/A			
rilling Co.:				Easting (NAD83): N/A		N Domody Db	1
rilling Meth Fill Rig Typ		Drilling			Project: Final GV Location: PG&E T	N Remedy Ph	
riller Name		<u>Longyear fra</u> Alymer		Depth to First Water: 44.85 ft bgs	Location. FG&L 1	ороск, мееці	es, Calliottii
rilling Asst				•	<u>rel</u> Project Number: <u>F</u>	RC000753.005	 51
ogger:				Sampling Interval: Continuous			
ditor:				Converted to Well: ⊠ Yes ☐ No			
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Soil Descript	ion	Drilling Notes	Drilling Fluid
- 121_ - 122_			Topock - Alluvium Deposits	GM (120.5'); weathered metamorphic cobble around cobble	black and green staining	(97.0 - 127.0') Formation collapse during clean out drilling with 10 inch casing, soft drilling (97' to	(37.0 - 205.0') No used
- 123 - 120 124			Topock - Alluvium Deposits	(122.0 - 124.0') Topock - Alluvium Depo (SM); dark grayish brown / dark yellowis grained to very coarse grained, angular to to very large pebbles, angular to subang	h brown(10YR 4/2); very fine to subangular; little granules	107'), slightly rough drilling (107' to 109'), soft drilling (109' to 117'), soft drilling lost 5 feet of sample	
125_				(124.0 - 128.0') Topock - Alluvium Depo silt and sand (GW-GM); light olive brown large pebbles, angular to subangular; so grained sand, angular to subangular; littl oxide staining; occasional sandier and si	n (2.5Y 5/6); granules to very me very fine to very coarse e silt; trace cobbles; wet; iron	downhole (117' to 127') with 6 inch casing	
126 - 127			Topock - Alluvium Deposits	GW-GM (126') brown (7.5YR 4/3); orange stainin			
128_			(	0 \( \text{(127'); moist} \) 0 \( (128.0 - 144.0') Topock - Alluvium Depotent of GM); light olive brown (2.5Y 5/6); granu	sits; Silty gravel with sand	(127.0 - 132.0') Soft drilling, recovered lost 5 feet of sample from drilling run	
129 - 60	No Sieve Samples			angular to subangular; little very fine to angular to subangular; little silf; little clay moist	ery coarse grained sand,	(117' to 127')	
131_	Collected	•	0	0 0 0 0 0 (131'); to 131.5' cobbles			
132	_			(132') brown (7.5YR 4/2)		(132.0 - 142.0') Rough drilling	
134			Topock - Alluvium Deposits	GM (133.5'); dry; with potential caliche in sec	liments and weak		
135_							
136 <sub>90</sub> 							
138							
_139							

9/	<b>ARC</b>	<b>ADIS</b>	Design & Consultancy for natural and built assets		Во	ring Lo	g		Shee	et: 8 of	11
Date S						Elevation:	N/A	Boring	No.:	MW-Md	
		eted: <u>04/30/</u>				g (NAD83):	N/A	_			
Drilling	-	Casca			_	(NAD83):	N/A		PG&E	/ D	
Drilling	-		•	-1- 144		•	216 ft bgs	-		/ Remedy Ph	
Drill R Driller			Longyear i ra Alymer				: 4-12 inches er: 44.85 ft bgs	_ Location: <u>F</u>	G&E IC	ороск, ічееаі	<u>es, California</u>
Drilling		•	<u>nland/J. Cand</u>		-		4 inch x 10 ft. Core Barrel	– Project Nu	mher: R	C000753 004	 51
Logge	-		iessi/R.Moniz/		-	-	Continuous	_ 1 10,0001140	111bC1. <u>11</u>	.0000700.000	71
Editor			McGrane		-	ted to Well:		_			
				0 5	Τ						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
	90			Topock - Alluvium Deposits	GM			0		(132.0 - 142.0') Rough drilling	(37.0 - 205.0') No used
144  145				Topock - Alluvium Deposits	ML	(ML) grain pebb	0 - 144.5') Topock - Alluvium Deposits; S; ; brown (10YR 5/3); low plasticity; some ve ed sand, angular to subangular; trace gran les, angular to subround; wet; liquefied	ery fine to medium nules to very large	9		
_ 146_						(SM) very pebb	5 - 154.4') Topock - Alluvium Deposits; S; brown (7.5YR 4/2) and brown (7.5YR 4/3) coarse grained, angular to subround; som les, angular to subround; some silt; trace on a gular; trace clay; moist to wet; occasiona	3); very fine graind ne granules to very cobbles, angular t	ed to y large o		
147	120					lense	s 2in to 6in thick				
148			MW-M-VAS-								
149  150		No Sieve	147-152 (<0.17 U ppb) 3/31/2019	Topock - Alluvium Deposits	SM						
 151		Samples Collected	15:21		Z		70,				
 152				X						(152.0 - 167.0')	
 153							,			Soft drilling	
154						(454	4. 466 El\ Tancele Allunium Denesita C	ilt. gravel with a sec	- d		
155						(GM)	4 - 166.5') Topock - Alluvium Deposits; S ; brown (7.5YR 4/2) and brown (7.5YR 4/2) pebbles, angular to subround; some very , angular to subround; some silt; little cobb	3); granules to ve fine to medium gr bles, angular to	ry rained		
156	180						ngular; moist to wet; iron oxide staining; oo o 6in thick	ccasional sand lei	ies		
157				Topock - Alluvium Deposits	GM	(157	); dry; with red and green staining				
158  159						(158	); moist				
160											
Abbre	viation	s: USCS =	Unified Soil C	Classificati	on Syst	em, ft = fee	t, bgs = below ground surface,	amsl = abov	e mean	sea level, G\	N =

ARC	CADIS	Design & Consultancy for natural and built assets		<b>Boring Lo</b>	g	5	Sheet: 9 of	11
Date Started				Surface Elevation:	N/A	Boring No	o.: <u>MW-Md</u>	
•	eted: <u>04/30/</u>			Northing (NAD83):	N/A	_		
Orilling Co.:	<u>Casca</u>			Easting (NAD83):	N/A	Client: PG&		
Orilling Meth		•		Total Depth:	216 ft bgs	•	GW Remedy Ph	
Orill Rig Typ				Borehole Diameter:		_ Location: <u>PG&amp;</u>	E Topock, Needle	es, Californi
Oriller Name	•	Alymer		Depth to First Wate	•		50000750005	- 4
Orilling Asst				Sampling Method:	4 inch x 10 ft. Core Barrel	_ Project Numbe	r: <u>RC000753.005</u>	)1
Logger: Editor:				Sampling Interval: Converted to Well:	Continuous	_		
	<u>Seam </u>	<u> McGrane</u>		Converted to vveil.	△ Fes ☐ No		<del> </del>	
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Soil Description		Drilling Notes	Drilling Fluid
							(152.0 - 167.0') Soft drilling	(37.0 - 205.0') No used
163_			Topock - Alluvium Deposits	GM O			0	
				(164');	moist to dry			
_100								
166_				800				
167				(166.5 (SM)	- 170.0') Topock - Alluvium Deposits; Sil reddish brown (5YR 4/3); very fine graine	ty sand with gravel		
168_			Topock -	angula ::::::::::::::::::::::::::::::::::::	r to subround; some silt; little granules to r to subround; trace cobbles, angular to s	very large pebbles,	(167.0 - 177.0') Soft drilling	
			Alluvium Deposits	SM				
_ _170	No Sieve							
	Samples Collected			(170.0 (GM):	- 176.5') Topock - Alluvi <mark>um</mark> Deposits; Sil brown (7.5YR 4/3) with brown (7.5YR 5/2	ty gravel with sand		
171_		•	0	large p	ebbl <mark>es, angular to</mark> subround; some cobbl gular; little very fine to medium grained sa gular; little silt; moist	es, angular to		
172120				0 (172');	dry; to 176.5', with red and green staining	g, potential caliche in		
			Topock -	I BRID	nts and weak cementation			
4			Alluvium Deposits	GM .				
_174		MW-M-VAS- 172-177	·	200				
4		(<0.033 U ppb)						
_175		4/2/2019 14:57						
				1 1:19				
176								
					- 192.0') Topock - Alluvium Deposits; Sil		<b>-     </b>	
177	1			D D D pebble	reddish brown / moderate brown(5YR 4/4 s, angular to subangular; some very fine	to very coarse grained	(177.0 - 192.0')	
170			_	sand;	ittle medium to very large pebbles, angulas; ittle silt; trace clay; wet to moist; interbe	ar to subangular; little	Soft drilling	
178_			Topock - Alluvium		onal well graded sand with gravel lenses			
180			Deposits					
_179								
180				13H				
	se: LISCS -	I Inified Soil (	laccification	on System ft = foot	bgs = below ground surface,	amel = abovo m	oan soa lovol. GV	Λ/ —

AF	RCADIS	Design & Consultancy for natural and built assets		<b>Boring Lo</b>	g		She	et: 10 of	11
Date Star	rted: <u>03/20/</u>	2019	;	Surface Elevation:	N/A	Borino	ı No.:	MW-Md	
Date Con	npleted: <u>04/30/</u>	2019	I	Northing (NAD83):	N/A	_	,	<u> </u>	
Drilling Co	o.: <u>Casca</u>	de	I	Easting (NAD83):	N/A	_ Client: <u> </u>	PG&E		
Drilling M		Drilling		Total Depth:	216 ft bgs	_ Project: <u> </u>	Final GV	V Remedy Ph	ase 1
Drill Rig T	Гуре: <u>Borat</u>	Longyear Tra		Borehole Diameter:		_ Location: [	PG&E T	opock, Needl	es, California
Driller Na	•	Alymer		Depth to First Wate	: 44.85 ft bgs	_			
Drilling As				Sampling Method:	4 inch x 10 ft. Core Barrel	_ Project Nu	mber: <u>F</u>	RC000753.00	51
Logger:				Sampling Interval:	Continuous	_			
Editor:	<u>Sean I</u>	McGrane	(	Converted to Well:					
Depth (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 _181_  _182_								(177.0 - 192.0') Soft drilling	(37.0 - 205.0') No used
 183 					70.	O		0	
184  185									
			Topock -						
186 <sub>18</sub>	80		Alluvium Deposits	GM Po 0					
			Ворозна						
_187				PIPIS					
			40	l of b					
_188				1 5 PJ					
_									
_189				60°					
_190	No Sieve Samples								
_ ]	Collected			Porto					
_191				P P					
 _192		MW-M-VAS-							
_104		190-195 (<0.17 U		(192.0	- 195.0') Topock - Alluvium Deposits; Sil reddish brown / moderate brown(5YR 4/4	ty gravel with sa	nd	(192.0') Change	
102		ppb) 4/10/2019		D P. C   12 5 VI	R 4/4): granules to large pebbles, angular	to subround: sor	ne 📗	in geologist to CB	
193		16:35	Topock -	very fi	ne to very coarse grained sand, angular to very coarse grained sand, angular to ay; trace cobbles; wet; weak cementation		silt;		
			Alluvium Deposits	GM 5 1	, , , , , , , , , , , , , , , , , , , ,				
194			_ 5550110						
				[ PA					
195			Topock -	(195.0	- 196.0') Topock - Alluvium Deposits; Sil	ty sand with grav	/el		
			Alluvium	SM   (SM);	reddish brown / moderate brown(5YR 4/4 grained, angular to subround; some silt;	); very fine grain	ed to		
_196 <sub>12</sub>	20		Deposits	pebble pebble	s, angular to subround; trace clay; wet			(196.0 - 203.0')	
 _197				(196.0 (GM); (2.5YI) very fi	<ul> <li>- 205.0") Topock - Alluvium Deposits; Sil reddish brown / moderate brown(5YR 4/4 k 4/4); granules to large pebbles, angular ne to very coarse grained sand, angular to ay; trace cobbles; wet; weak cementation</li> </ul>	<ul> <li>trace reddish b to subround; sor o subround; little</li> </ul>	rown ne	Rough drilling	
198			Topock -	1 5.710	a,, adoc cossico, woi, woar comentation				
			Alluvium Deposits	GM P					
 _199_									
_133_				l\$H					
				1 600					
200	tions: LISCS -	Linified Soil C	laccificatio	n System ft = feet	bgs = below ground surface,	amel = ahov	e mean	see level C	\/ <del>-</del>

9/	١RC	ADIS	Design & Consultancy for natural and built assets		Boring Log	g		Sheet: 11 of	11
Date S	Started	03/20/2		_	Surface Elevation:	N/A	- Boring N	lo.: <u>MW-Md</u>	
Date 0	Comple	ted: <u>04/30/</u>	2019		Northing (NAD83):	N/A		<u> </u>	
Drilling		<u>Casca</u>			Easting (NAD83):	N/A	Client: <u>PG</u>		
Drilling			Drilling		Total Depth:	216 ft bgs	•	al GW Remedy Ph	
Drill R			••		Borehole Diameter:	4-12 inches	_ Location: <u>PG</u>	&E Topock, Needle	<u>es, California</u>
Driller Drilling			-		Depth to First Water Sampling Method:	4 inch x 10 ft. Core Barrel	Project Numb	ner: RC000753 005	 51
Logge					Sampling Interval:	Continuous	_ i roject i unic	100000733.000	<i>7</i> I
Editor:			ИсGrane		Converted to Well:		-		
	>			υ F					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Soil Description		Drilling Notes	Drilling Fluid
								(196.0 - 203.0') Rough drilling	(37.0 - 205.0') No used
_201_									
202									
_202_			no sample (Interval did	Topock -					
203	120		not produce.) 4/10/2019	Alluvium Deposits	GM D				
200			12:28						
204									
9000									
205_								(005 0 044 0)	(005.0.044.01)
0 						<ul> <li>208.0') Topock - Bedrock - metadiorite;</li> <li>grayish brown (2.5Y 5/2) with greenish gr</li> </ul>	ay(10Y 6/1); granule	S Very tight	(205.0 - 211.0') 600 gallons of
_206_					grained	e pebbles, angular to subround; some ver I sand, angular to subround; some silt; lit		up core barrel at	water used; 600 gallons of water
				Topock - Bedrock -	GM o modera	ate cementation; weathered metadiorite		208'	recovered; 0 gallons of water
207_				metadiorite	[3]				lost
		No Sieve							
208_	72	Samples Collected			(208.0	- 216.0') Topock - Bedrock - metadiorite;	grayish brown (2.5)	<del>,</del>	
2		000000			subanc	th greenish gray(10Y 6/1); granules to lar jular; some very fine to very coarse grain	ed sand, angular to		
						jular; some silt; little clay; dry; moderate c zed during drilling	ementation; bedrock	·	
을 생 210									
DAIABAS									
ੀ									
					(211');	to 213 ft. moist, potential slough based o between runs, notes, and photos	n QC geologist revie	(211.0 - 216.0') Rough drilling,	(211.0 - 216.0') No used
212				Topock - Bedrock -		zomost, une, netes, una prietes		hard, rods and head chattering	
L LES				metadiorite					
213_									
501 51	48								
<u>214_</u>					(214'):	to 214.2 silt lens potentially pulverized m	etadiorite		
					(214),	to 2 14.2 out lend potentially pulverized III	Cidalonic		
ž _215_									
989									
<u>216</u>					1 1///	End of Boring at 216.0 'bg	S.		
017						·			
_217									
90									
_218_									
5 5 _219_									
220									
2					•	bgs = below ground surface,			
20			-			oratory reporting limit, NR = N	o Recovery, b	lue water table syr	mbol
g repres	ents d	eptn to wate	er measured	auring first	VAS interval				

Date Started:	9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	og		Sheet:	1 of	5
Notifing (No. 1975)  Cascade Sand Compared Tack Mount to Depth Sonic Drilling Street Sonic Street Street Sonic Street Street Sonic Street Street Sonic Street Sonic Street Street Sonic Street			05/13/2	2019					Boring	No.: N	MW-Ms	
Drilling Method:   Drilling Asst:   D		-										
Drilling Asst. Drilling Fuld Drilling Fuld Drilling Asst. Drilling Fuld Dr		-										
Drilling Mass:  C. Winland M. Candelaria  Sampling Method:  Sam McGrane  Converted to Well: (2) Yes □ No  Sean McGrane  Converted to Well: (2) Yes □ No  Sean McGrane  Converted to Well: (3) Soil Description  Sean McGrane  Converted to Well: (3) Soil Description  Drilling Notes  Drilli				-			•	_	•		-	
Drilling Asst:									_ Location: P	G&E TOP	ock, iveedi	es, California
Comparison   Com			-			-		<del>-</del>	- Project Nur	mher: RC		 51
Editor: Sean McGrane		-				-	-		_ 1 10,000 1401	ilber. <u>Ito</u>	000700.000	71
1			·			-	-		_			
1		>			υ 5							
1	Depth (ft)	Recover (in)			Geologi	USCS	USCS Class	Soil Description		Di	rilling Notes	Ū
20 drill rods			No Sieve Samples Collected				clea recc	r past 3 ft. bgs recieved approval to start drivery  - 37.0') (NR); Core not collected or logged,	illing, not logged, r	F	(18.0 - 19.0') Drill rods chattering (19.0 - 20.0')	(6.0 - 7.0') 5 gallons of water used; 5 gallons of water recovered; 0 gallons of water lost (7.0 - 99.0') No
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =	<b>Abbre</b>	viations	s: USCS = I	Unified Soil C	Classificati	on Svste	em. ft = fee	et, bas = below around surface.	amsl = above	e mean s	ea level. G\	<b>/</b> / =

9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 2 of	5
Date S	Started	05/13/2	2019		Surface	Elevation:	N/A	Bori	na No.:	MW-Ms	
	-	ted: <u>05/28/2</u>				g (NAD83):	N/A	_			
Drilling	-	Casca				(NAD83):	N/A	_ Client:	PG&E		
Drilling			-		Total D	-	99 ft bgs	_ Project:		W Remedy Ph	
Drill R Driller			<u>_ongyear Tra</u>				10-12 inches : 44.23 ft bgs	_ Location	1: <u>PG&amp;E</u>	Topock, Need	ies, California
Drilling		•	<u>lland/J. Cand</u>		-	ng Method:	8 inch x 10 ft. Core Barrel	- Project	Number	RC000753 00	 51
Logge			el Andrews		-	ng Interval:	Screen Interval	_ 1 10,000	rtarribor.	1.0000100.00	01
Editor			<b>McGrane</b>		-	ted to Well:	Yes □ No	_			
	>			٥ <u>ج</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
21	108	No Sieve Samples Collected		Topock - Alluvium Deposits	NR SM	(7.5R suban	42.5') Topock - Alluvium Deposits; Silty 4/3); very fine grained to very coarse gra gular; some granules to very large pebble gular; little silt; trace clay; dry to moist	ined, angular	to	chattering (20.0 - 27.0') Casing getting stuck, voids forming, rough drilling and drill rods chattering (20' to 26')  (33.0 - 38.0') Drill rods chattering	(7.0 - 99.0') No water used
-											
40 Abbre	viation:	s: USCS = I	Unified Soil C	L Classificati	on Syste	<u>                                      </u>	bgs = below ground surface,	amsl = ah	nove mea	n sea level. G	W =

	1110	ADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	9		Sheet: 3 of	5
	tarted:					Elevation:	N/A	Boring N	lo.: MW-Ms	
	-	ted: <u>05/28/</u>				g (NAD83):	N/A	. —	<u> </u>	
-	Co.:	<u>Casca</u>			-	(NAD83):	N/A	Client: PG8		
-	Metho		•			•	99 ft bgs	•	al GW Remedy Ph	
	g Type		Longyear Tra				10-12 inches	Location: PG	&E Topock, Needl	<u>es, Californi</u>
	Name:	-	-		•		: 44.23 ft bgs	. — — — — — — — — — — — — — — — — — — —	DC000752.00	F 4
_	Asst:		nland/J. Cand el Andrews		-	ng ivietnou: ng Interval:	8 inch x 10 ft. Core Barrel Screen Interval	Project Numb	er: RC000753.00	01
ogger ditor:	•		McGrane		-	ted to Well:	X Yes □ No	•		
1101.		<u>Sean i</u>	I		T	led to vveii.	△ Tes ☐ NO			<u> </u>
(ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
- 41 - 42				Topock - Alluvium Deposits	SM					(7.0 - 99.0') No water used
43 - 44	108			Topock - Alluvium Deposits	sc	(SC); to sub	44.0') Topock - Alluvium Deposits; Claye rown (10YR 4/3); fine grained to very coound; some granules to large pebbles, any; trace silt; dry to moist	arse gr <mark>ained,</mark> angular gular to subangular;		
45 45 - 46				Topock - Alluvium Deposits	SM	brown subrou	46.0') Topock - Alluvium Deposits; Silty s (10YR 4/3); very fine grained to very coar nd; little granules to large pebbles, angula iica; wet	se grained, angular	to	
47						7//// (47.0	47.0'); No recovery  49.5') Topock - Alluvium Deposits; Claye		(47.0 - 52.0')	
48 - 49				Topock - Alluvium Deposits	sc	angula	rown (10YR 4/3); very fine grained to ver to subround; some granules to very larg jular; some cobbles, angular to subangula	e pebbles, angular to		
50 - 51		No Sieve Samples Collected		Topock - Alluvium Deposits	SM	brown suban	52.0') Topock - Alluvium Deposits; Silty s (10YR 4/3); fine grained to coarse grained jular; some granules to very large pebbles jular; some silt; trace clay; wet	d, angular to `	1);	
52_	120			T		6 4 6 6 2 0	53.0') Topock - Alluvium Deposits; Silty o	gravel with sand (GN	4).	
- 53				Topock - Alluvium Deposits	GM	dark g large p	agish brown / dark yellowish brown(10YR ebbles, angular to subangular; little fine to ingular to subround; little silt; trace cobble jular; trace boulders; trace clay; wet	(4/2); granules to ve very coarse grained	ery	
54 			MW-M-VAS- 52-57 (28 pph)			dark y graine	57.0') Topock - Alluvium Deposits; Silty sellowish brown (10YR 4/4); very fine grain I, subround; some small to large pebbles, jular; some silt; trace clay; trace mica; we	ed to very coarse angular to	<del>1);</del>	
55 - 56 - 57			(28 ppb) 3/28/2019 11:10	Topock - Alluvium Deposits	SM					
58_							67.0') (NR); Core not collected or logged log MW-Md for lithology	, no recovery, see		
.59_					NR					
					1	/ \				1

9/-	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring L	og		She	et: 4 of	5
Date S	Started:	05/13/	2019		Surface	Elevation	: <u>N/A</u>	Borin	u No .	MW-Ms	
Date C	Comple	ted: <u>05/28/</u>	2019		Northin	g (NAD83	: <u>N/A</u>		ıg 140	INIAA-INIS	
Drilling	g Co.:	<u>Casca</u>	de		Easting	(NAD83)	N/A	Client:	PG&E		
Drilling	y Metho	od: <u>Sonic</u>	Drilling		Total D	epth:	99 ft bgs	Project:	Final G\	N Remedy Pl	nase 1
Drill Ri	ig Type	: <u>Borat</u>	Longyear Tra					Location	PG&E T	opock, Need	<u>les, California</u>
	Name:	•	Alymer		Depth t	o First Wa	ter: <u>44.23 ft bgs</u>				
Drilling	g Asst:		nland/J. Cand		-	ng Method		Project N	lumber: <u>F</u>	RC000753.00	51
Logge	r:		el Andrews		-	ng Interva					
Editor:		<u>Sean</u>	McGrane		Conver	ted to We	: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	SOSO	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
61 62 63 64 65 66 67 68 68 68 68 68				Topock - Alluvium Deposits	NR GM	(7. fin	0 - 68.0°) Topock - Alluvium Deposits; Sil R 4/4); granules to very large pebbles, ar to very coarse grained sand, angular to s	ngular to subrour	d; some	(67.0 - 77.0') Rough drilling	(7.0 - 99.0') No water used
68 69 70 71 72	120	No Sieve Samples Collected		Topock - Alluvium Deposits	SM	(6t)	7; wet 0 - 72.0') Topock - Alluvium Deposits; Sidish brown (5YR 4/3); medium grained to ular to subround; some silt; little granules ubangular; trace cobbles, angular to suba 5'); some small to very large pebbles, angular to subangular; trace mica	very coarse grain to large pebbles angular; trace cla gular to subangul	ned, angular y; wet ar; trace		
 73  74			MW-M-VAS-	Topock -	C	pe gra	0 - 76.0') Topock - Alluvium Deposits; Sil dish brown / moderate brown(5YR 4/4); gu bles, angular to subangular; some fine to ned sand, angular to subangular; little silt ubangular; trace clay; wet	ranules to very la	rge		
			72-77 (<0.033 U	Alluvium Deposits	GM	P P					
 75			ppb) 3/29/2019			s Pid					
_,,,			14:01			H¢.					
76						6 P.12					
76					1		0 - 83.5') Topock - Alluvium Deposits; Sil				
						Dall an	cyellowish brown (10YR 4/4); granules to ular to subangular; some fine to very coa	rse grained sand			
_77							ubround; little silt; trace cobbles, angular;	wet			-
-				Topock -		600					
_78				Alluvium	GM	(397)					
	120			Deposits		[66]					
79						学到					
80						<u> </u>					
Abbrev	viations	s: USCS =	Unified Soil C	Classificati	on Svst	em, ft = fe	et, bgs = below ground surface	e. amsl = abo	ove mear	n sea level. G	W =

9/-	١RC	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	g		She	eet: 5 of	5
Date S					Surface			N/A	Borin	ıq No.:	MW-Ms	
	•	ted: <u>05/28/2</u>			Northin			N/A	_			
Drilling		Casca			Easting	•	33):	N/A	Client:	PG&E		
Drilling			Orilling		Total D	•		99 ft bgs	-		W Remedy Ph	
Drill Ri			ongyear Tra					10-12 inches	_ Location:	PG&E	l opock, Need	les, California
Driller		•	llymer land/J. Cand		-			: <u>44.23 ft bgs</u> <u>8 inch x 10 ft. Core Barrel</u>	- Droiget N		DC000753.00	
Drilling					Samplii Samplii	-		Screen Interval	_ Project iv	iumber. <u>I</u>	RC000753.00	<u> </u>
Logge Editor:			/IcGrane		Conver	-			_			
Luitoi.		<u>ocan n</u>			T		V CII.	163 [ 140				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
 81  82  83	120			Topock - Alluvium Deposits	GM			ecrease in cobbles	0			(7.0 - 99.0') No water used
84  85				Topock - Alluvium Deposits	ML		brown ( grained	85.0') Topock - Alluvium Deposits; Sand 10 YR 4/3); low plasticity; some very fine i sand, angular to subangular; little granu s, angular; wet	to very coarse	e `		
86 86 87				Topock - Alluvium Deposits	SM		brown (	88.5') Topock - Alluvium Deposits; Silty s (10YR 4/3); very fine grained to very coar nd; little granules to large pebbles, angula	rse gr <mark>ained, ar</mark>	ngular to	(87.0 - 97.0')	
 88 								90.5') Topock - Alluvium Deposits; Claye			Rough drilling	
89  90		No Sieve Samples Collected		Topock - Alluvium Deposits	SC		angular	rown (10YR 4/3); medium grained to very r to subround; little small to very large pet jular; little silt; little clay; trace cobbles, an	obles, angular	to		
 _91_  _92_  _93_	120		•	8	0		and gra	97.0') Topock - Alluvium Deposits; Well (avel (SW-SM); dark yellowish brown (10) to very coarse grained, angular to round ebbles, angular to subangular; little silt; w	/R 4/4); mediu l; some granul	ım		
 94  95  96				Topock - Alluvium Deposits	SW-SM							
97  98 					NR			99.0") (NR); Core not collected or logged log MW-Md for lithology	, no recovery,	see		
								End of Boring at 99.0 'bgs	i.			
100												
	/iation	s: USCS = l	Jnified Soil C	lassificati	on Syst	em, ft =	feet,	bgs = below ground surface, a	amsl = abo	ove meal	n sea level, G	W =
1			1									

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol represents depth to water measured during first VAS insterval MW-Md

<b>ARCA</b>	DIS Design & for natura built asset	Consultancy al and ets		Well Consti	ruction Log	5	Sheet: 1 of 8
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor: Total Depth:	06/16/2019 07/31/2019 Cascade Sonic Drilling Eddie Ramos L. Amaya/ O. G. Jeffers / A Sean McGrar 143 ft bgs	Flores . Mack		_ Surface Elevation: _ Shallow Well Elevation: _ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Water Level Start: _ Development End Date: _ Well Completion:	N/A N/A N/A N/A N/A N/A 10-12 inches 90.27 ft bgs 7/13/2019     Flush   Stick-up	Client: PG&E Project: Final (	MW-R-109, MW-R-139  GW Remedy Phase 1  Topock, Needles, California  T: RC000753.0051
Groundwat Sample II		USCS Code	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
1				(0.0 - 1.4') Concrete Pad (0.5 - 89.0') 2" PVC Sch 80 Casing  (1.4 - 4.0') Bentonite seal chips	(0.6 - 119.0') 2" PVC Sch 80 Casing	(1.4 - 4.0') 2.68 bags	(0.0 - 1.4') 6.5 bags Note: 2.5 x 2.5 ft concrete pad with 18 diameter lockable vault, King Kon-Crete 4000 PSI  (1.4 - 4.0') 7 bags (161%) Note: Puregold Medium Chips, used to fill void from approximately 2 to 4 ft bgs
4		NR NR		(4.0 - 75.0') Portland Cement 6% Bentonite	(0.0 - 15.0') 12.0" Borehole	(4.0 - 75.0') 286.1 gallons	Note: During development an obstruction was observed at ~8 ft. bgs, a buldge in the casing was observed with a downhole camera, the casing does not appear to be compromised  (4.0 - 75.0') 480 gallons (68%) Note: Used Type I,II, and V and Hydrogel

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval MW-Rd, VAS collected during drilling MW-Rd

<b>ARC</b>	DIS Design & for natura built asse	Consultancy al and ets	Well Const	ruction Log	5	Sheet: 2 of 8
Date Started:	06/16/2019		Surface Elevation:	N/A	Well ID: N	//W-R-109, MW-R-139
Date Completed			Shallow Well Elevation:	·		
Drilling Co.:	Cascade		Deep Well Elevation:	N/A	Client: <u>PG&amp;E</u>	
Drilling Method:	Sonic Drilling		Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller Name:	Eddie Ramos		Easting (NAD83):	N/A	Location: <u>PG&amp;E</u>	Topock, Needles, California
Drilling Asst:	L. Amaya/ O.		Borehole Diameter:	10-12 inches	— — — — — — — — — — — — — — — — — — —	DC0007E2 00E4
Logger:	G. Jeffers / A. Sean McGrar		Water Level Start:	90.27 ft bgs	Project Number	r: RC000753.0051
Editor: Total Depth:	143 ft bgs	<u>ie</u>	Development End Date: Well Completion:	. <u>//13/2019</u>		
Total Deptili.					T	
Groundwa Sample I	Geologic Formation	USCS Code USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
21		NR	(4.0 - 75.0') Portland Cement 6% Bentonite  (29.5 - 30.5') Centralizer	(15.0 - 143.0') 10.0" Borehole	(4.0 - 75.0') 286.1 gallons	(4.0 - 75.0') 480 gallons (68%) Note: Used Type I,II, and V and Hydrogel

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval MW-Rd, VAS collected during drilling MW-Rd

<b>ARC</b>	DIS   Design & C   for natura built asset	Consultancy Land ts	Well Const	ruction Log	S	Sheet: 3 of 8
Date Started:	06/16/2019		_Surface Elevation:	N/A	Well ID: N	//W-R-109, MW-R-139
Date Completed			_Shallow Well Elevation:	N/A		
Drilling Co.:	Cascade		_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method:	Sonic Drilling		_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller Name:	Eddie Ramos		_Easting (NAD83):	N/A	Location: <u>PG&amp;E</u>	Topock, Needles, California
Drilling Asst:	L. Amaya/ O.		_Borehole Diameter:	10-12 inches	— — — — — — — — — — — — — — — — — — —	DC0007E2 00E4
Logger: Editor:	G. Jeffers / A. Sean McGran		_Water Level Start: _Development End Date:	90.27 ft bgs	Project Number	:: RC000753.0051
Total Depth:	143 ft bgs	<u>.</u>	_Development End Date. _Well Completion:	<ul><li>✓ Flush Stick-up</li></ul>	<u> </u>	
			_ 11011 00111p10110111			
Groundwa Sample I	Geologic Formation	USCS Code USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
- 41 42 43		NR	(4.0 - 75.0') Portland Cement 6% Bentonite	(15.0 - 143.0') 10.0" Borehole	(4.0 - 75.0') 286.1 gallons	(4.0 - 75.0') 480 gallons (68%) Note: Used Type I,II, and V and Hydrogel

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval MW-Rd, VAS collected during drilling MW-Rd

	<b>ARC4</b>	DIS Design & Co for natural shuilt assets	onsultancy and		Well Consti	ruction Log	S	Sheet: 4 of 8		
(0.5 - 80.0) 2° PVC   Sch 80 Casing   PVC Sc	Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor:	O7/31/2019 Cascade Sonic Drilling Eddie Ramos L. Amaya/ O. F G. Jeffers / A. Sean McGrane 143 ft bgs	Mack	Shallow Well Elevation:         N/A           Deep Well Elevation:         N/A           Northing (NAD83):         N/A           Easting (NAD83):         N/A           Borehole Diameter:         10-12 inches           Water Level Start:         90.27 ft bgs           Development End Date:         7/13/2019		N/A N/A N/A N/A N/A 10-12 inches 90.27 ft bgs 7/13/2019	Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, Calife			
(0.5 - 88.07) 2° PVC   Sch 80 Casing   PVC S	Groundwar Sample II	Geologic	Code	USCS	Well Co	onstruction				
			NR		(4.0 - 75.0') Portland Cement 6% Bentonite	PVC Sch 80 Casing	(4.0 - 75.0') 286.1 gallons	(4.0 - 75.0') 480 gallons (68% Note: Used Type I,II, and V ar Hydrogel		
					(75.0 - 85.0') Bentonite seal chips		(75.0 - 85.0') 6.97 bags	(75.0 - 85.0') 8 bags (15%) Note: Puregold Medium Chip		
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundward pb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval MW-Rd, VA	 80 Abbreviations: U									

9/	ARCA	D	S Design & C for natura built asset	Consultancy l and ts		Well Const	truction Log		Sheet: 5 of 8
Date S	started:	06/	16/2019			_Surface Elevation:	N/A	Well ID:	MW-R-109, MW-R-139
	completed:	07/	31/2019			_Shallow Well Elevation:	: <u>N/A</u>		
Drilling	Co.:	Cas	scade			_Deep Well Elevation:	N/A	Client: PG8	&E
Drilling	Method:	Sor	nic Drilling			_Northing (NAD83):	N/A	Project: Fina	l GW Remedy Phase 1
Driller I	Name:	Edd	<u>die Ramos</u>			Easting (NAD83):	N/A	Location: <u>PG</u> 8	RE Topock, Needles, California
Drilling	Asst:	<u>L. /</u>	Amaya/ O.	Flores		Borehole Diameter:	10-12 inches		
Logge	r:	<u>G.</u> .	Jeffers / A.	Mack		_Water Level Start:	90.27 ft bgs	Project Numb	er: RC000753.0051
Editor:		Sea	an McGran	ie		Development End Date:	e: <u>7/13/2019</u>		
Total D	Depth:	143	3 ft bgs			Well Completion:			
Depth (ft)	Groundwate Sample ID		Geologic Formation	USCS	USCS Class	Well C	Construction	Calculated Material Volumes	Material Volumes Installed
81 82 83 84 85				NR		(0.5 - 89.0') 2" PVC — Sch 80 Casing  (75.0 - 85.0') — Bentonite seal chips	— (0.6 - 119.0') 2" PVC Sch 80 Casing	(75.0 - 85.0') 6.97 bags	(75.0 - 85.0') 8 bags (15%) Note: Puregold Medium Chips
86 87 88 90 91 92			Topock - Alluvium Deposits	SW-SM		(89.0 - 109.0') 2" ———————————————————————————————————	(15.0 - 143.0') 10.0" Borehole		
93 94 95 96	MW-R-VAS- 92-97 (45 ppb) 5/13/2019 11:44		Deposits  Topock -			(85.0 - 113.0') Cemex #3 MESH (8x10)		(85.0 - 113.0') 27.2 bags	(85.0 - 113.0') 34 bags (25%) Note: Lapis Lustre Sand
97 98 99 100			Alluvium Deposits  Topock - Alluvium Deposits	SM SW-SM					

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, bpb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval MW-Rd, VAS collected during drilling MW-Rd

9/	ARCA	DIS Design & for natura built asse	Consultancy I and ts		Well Consti	ruction Log	:	Sheet: 6 of 8
Date S	tarted:	06/16/2019			_Surface Elevation:	N/A	Well ID: N	MW-R-109, MW-R-139
Date C	completed:	07/31/2019			_Shallow Well Elevation:	N/A		
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	Ξ
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	N/A	Project: Final	GW Remedy Phase 1
Driller I	Name:	Eddie Ramos			_Easting (NAD83):	N/A	Location: PG&I	E Topock, Needles, California
Drilling		L. Amaya/ O.			_Borehole Diameter:	<u>10-12 inches</u>	<u> </u>	
Loggei	r:	G. Jeffers / A.	Mack		_Water Level Start:	90.27 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGrar	ie		_Development End Date:	7/13/2019		
Total D	epth:	143 ft bgs			_Well Completion:			
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
			SW-SM		(89.0 - 109.0') 2" —	(0.6 - 119.0') 2" PVC Sch 80 Casing		
101		Tanaak			(20-slot) Screen			
		Topock - Alluvium	SM					
100		Deposits						
102				1				
				1\ /				
103				\ /				
				$  \setminus   /  $				
104				$  \setminus /  $				
				$  \ \   \ \  $			•	
105			NR					
				$  \ \   \ \  $				
106				/				
				/	(85.0 - 113.0') Cemex #3 MESH		(85.0 - 113.0') 27.2 bags	(85.0 - 113.0') 34 bags (25%) Note: Lapis Lustre Sand
107				/ \	(8x10)		bags	Note: Lapis Lustre Sand
108								
				$\langle \langle \lambda \rangle \rangle$				
109		Topock - Alluvium	SM					
		Deposits	Sivi					
110					(109.5 - 110.5')	(15.0 - 143.0') 10.0"		
				1	Centralizer	Borehole		
111			•		(109.0 - 111.3')			
					Sump and End Cap			
112								
				$  \setminus    $		의 [기		
113				$  \ \   \ \  $				
$\vdash$ $\dashv$			NR					
114				/\				
$\vdash$ $\dashv$				/	(112.0 117.0)			
115				/	(113.0 - 117.0') Bentonite seal		(113.0 - 117.0') 3.3 buckets	(113.0 - 117.0') 4 buckets (21%) Note: Pel-Plug (TR30) 3/8"
<u> </u>				/	pellets			3, 11, 11
116				/ \				
$\vdash$ $\dashv$				/ \				
117					i, i.e.			
<u> </u>				$  \setminus /  $		세 [4]		
118	MW-R-VAS-		NR	$\mid \times \mid$				
L	117-122 (5.8 ppb)			/	(117.0 - 143.0') Cemex #3 MESH		(117.0 - 143.0') 27.3	(117.0 - 143.0') 34 bags (25%)
119	5/14/2019 10:14			<u> </u>	(8x10)		bags	Note: Lapis Lustre Sand
	10.17	Topock - Alluvium	SM			(119.0 - 139.0') 2" Sch 80 PVC		
_120_		Deposits				(20-slot) Screen		
Abbrev	/iations: U	SCS = Unified	Soil Cl	lassifica	tion System, ft = feet, bgs	= below ground surface, ar	msl = above mean	sea level, GW = groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval MW-Rd, VAS collected during drilling MW-Rd

9/	ARCA	DIS Design for natural built as	& Consultancy ural and sets		Well Const	ruction	Log		Sheet: 7 of 8
	Started:	06/16/2019			_Surface Elevation:	N/A		Well ID:	MW-R-109, MW-R-139
	-	07/31/2019			_Shallow Well Elevation:	N/A			
Drilling		Cascade			_Deep Well Elevation:	N/A		Client: PG	
Drilling	Method:	Sonic Drilling	]		_Northing (NAD83):	N/A		Project: <u>Fina</u>	al GW Remedy Phase 1
Driller	Name:	Eddie Ramo	S		_Easting (NAD83):	N/A		Location: <u>PG</u>	&E Topock, Needles, California
Drilling	y Asst:	L. Amaya/ O	. Flores		_Borehole Diameter:	10-12 inch	ies		
Logge	r:	G. Jeffers / A	A. Mack		Water Level Start: 90.27 ft bgs		<u>js</u>	Project Numb	per: RC000753.0051
Editor:		Sean McGra	ne		_Development End Date:			_	
Total [	Depth:	143 ft bgs			_Well Completion:	× Flush	Stick-up		
Depth (ft)	Groundwat Sample IE		USCS	USCS	Well C	onstruction		Calculated Material Volumes	Material Volumes Installed
 121  122	MW-R-VAS- 117-122 (5.8 ppb) 5/14/2019 10:14	Topock - Alluvium Deposits	SM				119.0 - 139.0') 2" Sch 80 PVC 20-slot) Screen		
 123									
 124									(9)
125		Topock - Alluvium	GW-GM				X		
126 _		Deposits							
127					0				
128  129								•	
130		Toposk			(117.0 - 143.0') Cemex #3 MESH	(15	5.0 - 143.0') 10.0" Borehole	(117.0 - 143.0') 27. bags	3 (117.0 - 143.0') 34 bags (25%) Note: Lapis Lustre Sand
131		Topock - Alluvium Deposits	GM		Cemex #3 MESH (8x10)		Boleriole	zugo	100. 24,00 200.0 04.10
132									
133					6				
134		Topock - Alluvium Deposits	GW-GM						
135  136		Boposito							
137									
138		Topock - Alluvium Deposits	SM						
139  140		Topock - Alluvium Deposits	SW-SM		(139.5 - 140.5') Centralizer				

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval MW-Rd, VAS collected during drilling MW-Rd

9/	ARC4	DIS   Design 8   for nature built ass	Consultancy ral and ets		Well Const	ruction Log	5	Sheet: 8 of 8
	Started:	06/16/2019			_Surface Elevation:	N/A	Well ID: N	//W-R-109, MW-R-139
Drilling	-	07/31/2019 Cascade			_Shallow Well Elevation: _Deep Well Elevation:	N/A N/A	Client: <u>PG&amp;E</u>	<u> </u>
_		Sonic Drilling			_Northing (NAD83):	N/A		GW Remedy Phase 1
_	, Name:	Eddie Ramos			_Easting (NAD83):	N/A	•	Topock, Needles, California
Drilling	Asst:	L. Amaya/ O.	Flores		_Borehole Diameter:	10-12 inches		
Logge		G. Jeffers / A			_Water Level Start:	90.27 ft bgs	Project Number	r: RC000753.0051
Editor		Sean McGra	ne		_Development End Date:		<u> </u>	
Total [	Depth:	143 ft bgs	<u> </u>		_Well Completion:			
Depth (ft)	Groundwat Sample II		Code	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed
 141  142  143		Topock - Alluvium Deposits	SW-SM		(139.5 - 140.5') Centralizer  (117.0 - 143.0') Cemex #3 MESH (8x10)	(15.0 - 143.0') 10.0" Borehole  (139.0 - 141.4') Sump and End Cap	(117.0 - 143.0') 27.3 bags	(117.0 - 143.0') 34 bags (25%) Note: Lapis Lustre Sand
144					End of Boring at 143.0 'bgs.			9
145								
146								
 147						~ (O) 1		
				1				
148							•	
149								
_ 150								
						10		
151								
152								
153	-							
154								
155								
156								
157	1							
157	1							
158								
L _								
159								
160								

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval MW-Rd, VAS collected during drilling MW-Rd

ARC	ADIS   Design for na built	gn & Consultancy atural and assets		Well Const	ruction Log	Sheet: 1 of 15		
Date Started: Date Complete Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor: Total Depth:	Cascade	ng D. O'Mar D. Flores C. Stewa		Surface Elevation: Shallow Well Elevation: Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date: Well Completion:	N/A N/A N/A N/A N/A N/A 4-12 inches 90.59 ft bgs 7/9/2019   Flush Stick-up	Client: PG&I Project: Final Location: PG&I	WW-R-192, MW-R-275  GW Remedy Phase 1 Topock, Needles, California r: RC000753.0051	
Groundw Sample		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed	
1	Topock - Alluvium Deposits	n SM		(0.0 - 1.5') Concrete Pad (0.5 - 172.0') 2" PVC Sch 80 Casing  (1.5 - 10.0') Bentonite Chips	(0.6 - 255.0') 277" PVC Sch 80 Casing  — (0.0 - 15.0') 12.0" Borehole	(1.5 - 10.0°) 8.75 bags	(0.0 - 1.5') 7 bags Note: 2.5 x 2.5 ft concrete pad with 18 diameter lockable vault, King Kon-Crete 4000 PSI  (1.5 - 10.0') 19 bags (117%) Note: Puregold Medium Chips, used to fill 24 to 36 inch void from ~5 to 10 ft bgs	
	Topock - Alluvium Deposits  Topock - Alluvium Deposits	NR SM		(10.0 - 66.8') Portland Cement 6% Bentonite	(15.0 - 279.0') 10.0" Borehole	(10.0 - 66.8') 221.8 gallons	Note: During installation of the first lift of high solids grout a 10 ft section of tremie pipe became unthreaded, during attempts to retrieve the pipe, the pipe fell to ~20 ft. bgs and was grouted in place in with the Portland Cement 6% Bentonite grout  (10.0 - 66.8') 320 gallons (44%)  Note: Type I, II, and V and Benseal	
	Topock - Alluvium Deposits	SW-SM					aca level CW = groundwater	

9/	ARCA	DIS Design & for natural built asset	Consultancy al and ets		Well Const	ruction Log	5	Sheet: 2 of 15
Date S		05/11/2019			_Surface Elevation:	N/A	Well ID: N	MW-R-192, MW-R-275
		07/31/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Driller I		Sonic Drilling E. Ramos / D		•	_Northing (NAD83):	N/A N/A	•	GW Remedy Phase 1  Topock, Needles, California
Drilling		L. Amaya/ O.		<u>a</u>	_Easting (NAD83): _Borehole Diameter:	4-12 inches	Location. <u>PG&amp;E</u>	TOPOCK, Needles, Calliomia
Logger		G. Jeffers / C		rt	Water Level Start: 90.59 ft bgs		Project Numbe	r: RC000753.0051
Editor:		Sean McGrar			_ _Development End Date:	•	_ ,	
Total D	epth:	287 ft bgs			_Well Completion:			
Depth (ft)	Groundwate Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
 21		Topock - Alluvium Deposits	SW-SM		(0.5 - 172.0') 2" ———————————————————————————————————	(0.6 - 255.0') 277" PVC Sch 80 Casing		
22 23 24		Topock - Alluvium Deposits	SM				0	0
25		Topock - Alluvium Deposits	SW-SM		(25.5 - 26.5') Centralizer  (10.0 - 66.8') Portland Cement 6% Bentonite	(15.0 - 279.0') 10.0" Borehole	(10.0 - 66.8') 221.8 gallons	(10.0 - 66.8') 320 gallons (44%) Note: Type I, II, and V and Benseal
34		Topock - Alluvium Deposits	SW					
36 36 37			NR					
38		Topock - Alluvium Deposits	SM					

9/	ARCA	DIS Design for not built a	n & Consultancy tural and ssets		Well Const	ruction Log		Sheet: 3 of 15
Date S	tarted:	05/11/2019			_Surface Elevation:	N/A	- Well ID:	MW-R-192, MW-R-275
		07/31/2019			_Shallow Well Elevation:		_	
Drilling		Cascade			_Deep Well Elevation:	N/A	_Client: <u>PG8</u>	
_		Sonic Drilling	-		_Northing (NAD83):	N/A	-	I GW Remedy Phase 1
Driller N		E. Ramos /		a	_Easting (NAD83):	N/A	_ Location: <u>PG8</u>	E Topock, Needles, California
Drilling		L. Amaya/ C			_Borehole Diameter:	4-12 inches	<del></del>	
Logger		G. Jeffers / 0		<u>rt</u>	_Water Level Start:	90.59 ft bgs	_ Project Numb	er: RC000753.0051
Editor:		Sean McGra	ane		_Development End Date:		_	
Total D	epth:	287 ft bgs			_Well Completion:	✓ Flush Stick-up		
Depth (ft)	Groundwate Sample ID		USCS	USCS Class			Calculated Material Volumes	Material Volumes Installed
 41		Topock - Alluvium Deposits	SM	8 8 8 8 8	(0.5 - 172.0') 2" ———————————————————————————————————	— (0.6 - 255.0') 277" PVC Sch 80 Casing		
414243444546474849505151525354555556575859		Topock - Alluvium Deposits  Topock - Alluvium Deposits	SW-SM		(10.0 - 66.8') Portland Cement 6% Bentonite	(15.0 - 279.0') 10.0" Borehole	(10.0 - 66.8') 221.8 gallons	(10.0 - 66.8') 320 gallons (44%) Note: Type I, II, and V and Benseal
60				<u>/ \</u>				

ate Started: <u>0</u> ate Completed: <u>0</u>	05/11/2019						
ate Completed: C					N/A	Well ID: M	//W-R-192, MW-R-27
					N/A		<u> </u>
•	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
illing Method: S	•			• , ,	N/A	•	GW Remedy Phase 1
	E. Ramos / D.			- <b>0</b> ( ,	N/A	Location: <u>PG&amp;E</u>	Topock, Needles, Californ
-	Amaya/ O.				4-12 inches		
	G. Jeffers / C.				90.59 ft bgs	Project Number	: RC000753.0051
	Sean McGran	ie		_Development End Date:		<u> </u>	
otal Depth: 2	287 ft bgs			_Well Completion:			
Groundwater Sample ID	Geologic	Code	Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
61	Topock - Alluvium Deposits	SW-SM		(0.5 - 172.0') 2" ———————————————————————————————————	— (0.6 - 255.0') 277" PVC Sch 80 Casing		
63	Topock - Alluvium Deposits	SM		(10.0 - 66.8') Portland Cement 6% Bentonite		(10.0 - 66.8') 221.8 gallons	(10.0 - 66.8') 320 gallons (44 Note: Type I, II, and V and Ben
65 - 66	Topock - Alluvium Deposits	SW )		(65.5 - 66.5') Centralizer			
67	Topock - Alluvium Deposits	SM		(66.8 - 71.0') Bentonite seal chips	— (15.0 - 279.0') 10.0" Borehole	(66.8 - 71.0') 2.96 bags	(66.8 - 71.0') 5.5 bags (86% Note: Enviroplug Medium Chi chips partially settled into high s grout
	Topock - Alluvium Deposits	SW-SM		(71.0 - 149.7') High Solids Grout		(71.0 - 149.7') 295.2 gallons	(71.0 - 149.7') 320 gallons (8' Note: Baroid Industrial Drillir Products - Aquaguard Benton Grout
	lion, U = not o	detected			= below ground surface, a mit, NR = no recovery, blue		

	DIS   Design & for natura built asse	rts		Well Consti	aonon Log		Sheet: 5 of 15	
Date Started:	05/11/2019			_Surface Elevation:	N/A	Well ID: I	MW-R-192, MW-R-27	
ate Completed:				_Shallow Well Elevation:	N/A			
rilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&I		
Orilling Method:	_			_Northing (NAD83):	N/A	•	GW Remedy Phase 1	
Oriller Name:	E. Ramos / D		a	_Easting (NAD83):	N/A	Location: <u>PG&amp;I</u>	E Topock, Needles, Californ	
ogger:	L. Amaya/ O. G. Jeffers / C.		+	_Borehole Diameter: Water Level Start:	4-12 inches 90.59 ft bgs	Project Number: RC000753.0051		
ogger: :ditor:	Sean McGran		ι	_vvaler Level Start. _Development End Date:				
otal Depth:	287 ft bgs	10		_ Well Completion:		<del></del>		
Groundwat Sample II		Code	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed	
-81 -81 -82 -83 -83 -84 -85 -86	Topock - Alluvium Deposits	SW-SM		(0.5 - 172.0') 2" PVC Sch 80 Casing	(0.6 - 255.0') 277" PVC Sch 80 Casing		Note: 1/2 Bag of Bentonite Chips 1/2 bag of #3 Cemex Sand insta in annulus to find depth to hig solids grout	
	Topock - Alluvium	SM		(71.0 - 149.7') High — Solids Grout	(15.0 - 279.0') 10.0" Borehole	(71.0 - 149.7') 295.2 gallons	(71.0 - 149.7') 320 gallons (8% Note: Baroid Industrial Drillin Products - Aquaguard Bentoni Grout	
94 — MW-R-VAS 92-97 (45 ppb) 5/13/2019 11:44 96 — — — — — — — — — — — — — — — — — — —	Deposits							
	SCS = Unified	Soil Cla	assificat	ion System, ft = feet, bgs	= below ground surface, a	msl = above mean	sea level, GW = groundwa	
.bbreviations: U	CCC Crimica							

9/	ARC4	DIS Design for natural built as	& Consultancy Iral and sets		Well Const	ruction Log	:	Sheet: 6 of 15
Date S	Started:	05/11/2019			_Surface Elevation:	N/A	Well ID: N	MW-R-192, MW-R-275
	-	07/31/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
_		Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
	Name:	E. Ramos / [		<u>a</u>	_Easting (NAD83):	N/A	Location: <u>PG&amp;</u>	E Topock, Needles, California
Drilling		L. Amaya/ O			_Borehole Diameter:	4-12 inches		D0000750 0054
Logge Editor:		G. Jeffers / C Sean McGra		π	_Water Level Start:	90.59 ft bgs	Project Numbe	r: RC000753.0051
	Depth:	287 ft bgs	ne		_Development End Date: _Well Completion:	<ul><li>✓ Flush Stick-up</li></ul>	_	
TOTAL	Јерин.							
Depth (ft)	Groundwat Sample II		USCS	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed
	117-122 (5.8 ppb) 5/14/2019 10:14	Topock - Alluvium Deposits	SM GM		(105.5 + 106.5') (71.0 - 149.7') High Solids Grout	(15.0 - 279.0') 10.0"  Borehole	(71.0 - 149.7') 295.2 gallons	Note: 1 Bag of Bentonite Chips and 1/2 bag of #3 Cemex Sand installed in annulus to find depth to high solids grout  (71.0 - 149.7') 320 gallons (8%) Note: Baroid Industrial Drilling Products - Aquaguard Bentonite Grout

<b>ARC</b>	DIS Design & C for natura built asset	Consultancy Il and ts		Well Consti	ruction Log	5	Sheet: 7 of 15
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor: Total Depth:	05/11/2019 07/31/2019 Cascade Sonic Drilling E. Ramos / D L. Amaya/ O. G. Jeffers / C. Sean McGran 287 ft bgs	Flores Stewa		_ Surface Elevation: _ Shallow Well Elevation: _ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Water Level Start: _ Development End Date: _ Well Completion:	N/A N/A N/A N/A N/A N/A 4-12 inches 90.59 ft bgs 7/9/2019      Flush   Stick-up	Client: PG&E Project: Final (	MW-R-192, MW-R-275  GW Remedy Phase 1  Topock, Needles, California  T: RC000753.0051
Groundwa Sample II		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
- MW-R-VAS 117-122 (5.8 ppb) 5/14/2019 10:14 -122		GM GM		(71.0 - 149.7') HighSolids Grout	(0.6 - 255.0') 277" PVC Sch 80 Casing	(71.0 - 149.7') 295.2 gallons	(71.0 - 149.7') 320 gallons (8%) Note: Baroid Industrial Drilling Products - Aquaguard Bentonite Grout

ARCA	DIS for natural built assets	onsultancy and S		Well Consti	ruction Log	\$	Sheet: 8 of 15
Date Started:	05/11/2019			_Surface Elevation:	N/A	Well ID: N	MW-R-192, MW-R-275
Date Completed:	07/31/2019			_Shallow Well Elevation:	N/A		
Drilling Co.:	<u>Cascade</u>			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method:	Sonic Drilling			_Northing (NAD83):	N/A	Project: <u>Final (</u>	GW Remedy Phase 1
	E. Ramos / D.		a	_Easting (NAD83):	N/A	Location: <u>PG&amp;E</u>	Topock, Needles, California
_	L. Amaya/ O. I			_Borehole Diameter:	4-12 inches		
	G. Jeffers / C.		<u>t</u>	_Water Level Start: 90.59 ft bgs		Project Number	r: RC000753.0051
	Sean McGran	<u>e</u>		Development End Date: 7/9/2019			
Total Depth:	287 ft bgs			_Well Completion:			
Groundwate Sample ID		Code	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	SM		(71.0 - 149.7') High Solids Grout  (147.5 - 148.5') Centralizer	(0.6 - 255.0') 277" PVC Sch 80 Casing	(71.0 - 149.7') 295.2 gallons	(71.0 - 149.7') 320 gallons (8%) Note: Baroid Industrial Drilling Products - Aquaguard Bentonite Grout
	Topock - Alluvium Deposits  Topock - Alluvium Deposits	GM		(149.7 - 170.0') Bentonite seal pellets	(15.0 - 279.0') 10.0" Borehole	(149.7 - 170.0') 18.5 buckets	(149.7 - 170.0') 15 buckets (-19%) Note: Pel-Plug (TR30) 3/8"

Bentonie sea   politics	9/	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log	;	Sheet: 9 of 15			
Date Completed   17.631/2019   Shallow Well Elevation:   M/A								Well ID: N	MW-R-192. MW-R-275			
Dalling Method:   Sonic Dilling		-										
Diller Name:   E. Ramos / D. OMara   Easting (NAD83):   NA	1											
Dalling Asst. L. Amaye' O. Fibres Borehole Diameter: 4-12 inches — 1-12 coper — G. Jeffers I.C. Stewart Water Level Start. Sean McGrane Development End Date: 79.50 ft bgs — Project Number: RC000753.0051 — Sean McGrane Z67.7 bgs. Well Completion: ③ Flush ☐ Stick-up  Sean McGrane Z67.8 bgs. Well Completion: ③ Flush ☐ Stick-up  Well Completion: ③ Flush ☐ Stick-up  Well Correction Medical Volumes Material Volumes Material Volumes installed  PVC Sch 80 Casing — PVC	_		-			• ,		•	_			
Control   Con					a	- , ,		Location: <u>PG&amp;</u> E	E Topock, Needles, California			
Editor   Sean McGrane	_		-					—       —	D0000750 0054			
Total Depth: 287 ft bgs					π		_	Project Numbe	r: <u>RC000753.0051</u>			
Fig.												
(15.0 - 278 ii) 1 (10.0 - 198 0) 25 2 (170.0 - 19	Total					_ vvoii completion.						
PVC Sch 80 Casing	Depth (ft)		Geologic Formation	USCS	USCS Class							
	162 163 164 165 166 167 168 169		Topock - Alluvium	GW		PVC Sch 80 Casing  (149.7 - 170.0') Bentonite seal	PVC Sch 80 Casing		(149.7 - 170.0') 15 buckets (-19%) Note: Pel-Plug (TR30) 3/8"			
180   Allowum Sw-SM (**)   Sw-S	171172173174175176177178179		Alluvium Deposits  Topock - Alluvium	SM-SM		Sch 80 PVC (20-slot) Screen (170.0 - 196.0') Cemex #3 MESH	Borehole		(170.0 - 196.0') 30.75 bags (22%) Note: Lapis Lustre Sand			

9/-	ARCA	DIS Design & for natu built ass	Consultancy al and ets		Well Consti	ruction Log	S	Sheet: 10 of 15
Date S	Started:	05/11/2019			_Surface Elevation:	N/A	- Well ID: N	//W-R-192, MW-R-275
Date C	Completed:	07/31/2019			_Shallow Well Elevation:	N/A		102, 11111 17 270
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	N/A	Project: Final 0	GW Remedy Phase 1
Driller I	Name:	E. Ramos / D	). O'Mar	a	_Easting (NAD83):	N/A	Location: <u>PG&amp;E</u>	Topock, Needles, California
Drilling	Asst:	L. Amaya/ O.	Flores		_Borehole Diameter:	4-12 inches		
Logge	r:	G. Jeffers / C	. Stewa	rt	_Water Level Start:	90.59 ft bgs	Project Number	:: RC000753.0051
Editor:		Sean McGra	ne		_Development End Date:			
Total D	Depth:	287 ft bgs			_Well Completion:			
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium	SM		(172.0 - 192.0') 2" —			
181		Deposits			(20-5101) 3016611			
182		<del>                                   </del>	-					
L -		Topock - Alluvium	ML					
183		Deposits	<u> </u>					
184								
iL J							\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
185								
186								
187								
100					(170.0 - 196.0')		(170.0 - 196.0') 25.2	(170.0 - 196.0') 30.75 bags (22%)
188					Cemex #3 MESH (8x10)		bags	Note: Lapis Lustre Sand
  -  -					(OX10)			
189								
H -								
190						(15.0 - 279.0') 10.0" Borehole		
H -								
191		Topock -	4					
		Alluvium	SM					
192		Deposits						
┡╶┤								
193					(192.5 - 193.5'); Centralizer			
194	MW-R-VAS- 192-197	-			(192.0 - 194.0') — : : L Sump and End Cap			
-	(<0.033 U ppb)							
195	5/16/2019							
<u> </u>	09:55							
196								
197								
198					(196.0 - 253.0')		(196.0 - 253.0') 54.2	(196.0 - 253.0') 54 buckets (0%)
					Bentonite seal — pellets		buckets	Note: Pel-Plug (TR30) 3/8"
199								
133								
200								
	viations: U	SCS = Unified	d Soil C	assifica	tion System, ft = feet, bas	= below ground surface. ar	msl = above mean :	sea level, GW = groundwater,

9/	ARCA	DIS Design & for natura built asse	Consultancy all and ts		Well Const	ruction Log		Sheet: 11 of 15			
I .	Started:	05/11/2019			_Surface Elevation:	N/A	Well ID:	MW-R-192, MW-R-275			
		07/31/2019			_Shallow Well Elevation:	N/A					
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG8				
		Sonic Drilling	011.4		_Northing (NAD83):	N/A	-	GW Remedy Phase 1			
Driller I Drilling		E. Ramos / D L. Amaya/ O.		<u>a</u>	_Easting (NAD83): _Borehole Diameter:	N/A 4-12 inches	Location: PG8	E Topock, Needles, California			
Logge		G. Jeffers / C.		rt	_ Borenole Diameter. _Water Level Start:	90.59 ft bgs	Project Number: <u>RC000753.0051</u>				
Editor:		Sean McGrar		11	_vvaler Ecverolart. _Development End Date:		_ 1 Toject Number. <u>10000733.0031</u>				
Total D		287 ft bgs			_Well Completion:		<del></del>				
	<u> </u>				<u> </u>	<u> </u>					
Depth (ft)	Groundwat Sample ID		Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed			
		Topock - Alluvium Deposits	SM		(196.0 - 253.0') Bentonite seal pellets	— (0.6 - 255.0') 277" PVC Sch 80 Casing  — (15.0 - 279.0') 10.0" Borehole	(196.0 - 253.0') 54.2 buckets	(196.0 - 253.0') 54 buckets (0%) Note: Pel-Plug (TR30) 3/8"			
220			<u> </u>				L	1			

ARCADIS Design & Consultancy for natural and built assets					Well Const	ruction Log		Sheet: 12 of 15		
Drilling	Completed: Co.:	05/11/2019 07/31/2019 Cascade			_Surface Elevation: _Shallow Well Elevation: _Deep Well Elevation:	N/A N/A N/A	Client: <u>PG&amp;</u>			
_		Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1		
Driller I		E. Ramos / D.		a	_Easting (NAD83): _Borehole Diameter:	N/A 4-12 inches	Location: <u>PG&amp;</u>	E Topock, Needles, California		
Drilling Logge		L. Amaya/ O. G. Jeffers / C.		rt	_ Borenole Diameter. _ Water Level Start:	90.59 ft bgs	— Project Numbe	er: RC000753.0051		
Editor:		Sean McGran			_Development End Date:			<u></u>		
Total D	Depth:	287 ft bgs			_Well Completion:					
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed		
	MW-R-VAS- 227-232 (<0.033 U ppb) 5/17/2019 10:05	Topock - Alluvium Deposits	SM		(196.0 - 253.0") Bentonite seal pellets  (235.5 - 236.5") Centralizer	— (0.6 - 255.0') 277" PVC Sch 80 Casing  — (15.0 - 279.0') 10.0" Borehole	(196.0 - 253.0') 54.2 buckets	(196.0 - 253.0') 54 buckets (0%) Note: Pel-Plug (TR30) 3/8"		

9/	ARCA	DIS Design & C for natura built asset	Consultancy I and ts		Well Const	ruction Log	S	Sheet: 13 of 15			
Date S	tarted:	05/11/2019			_Surface Elevation:	N/A	Well ID: N	MW-R-192, MW-R-275			
	-	07/31/2019			_Shallow Well Elevation:	N/A		*			
Drilling		<u>Cascade</u>			_Deep Well Elevation:	N/A	Client: PG&E				
		Sonic Drilling	011.4		_Northing (NAD83):	N/A		GW Remedy Phase 1			
Driller N		E. Ramos / D		a	_Easting (NAD83):	N/A	Location: <u>PG&amp;E</u>	Topock, Needles, California			
Drilling		L. Amaya/ O. G. Jeffers / C.		<b>.</b>	_Borehole Diameter: Water Level Start:	4-12 inches	Project Number: <u>RC000753.0051</u>				
Logger Editor:		Sean McGran		rt	_vvaler Level Start: _Development End Date:	90.59 ft bgs	Project Number: RC000753.0051				
Total D		287 ft bgs	<u>ie</u>		_Development End Date. _Well Completion:	<ul><li>✓ Flush Stick-up</li></ul>	_				
Total B	- Орин.				_ vvoii Completion:		1				
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed			
241		Topock - Alluvium Deposits	SM		(196.0 - 253.0') Bentonite seal pellets	— (0.6 - 255.0') 277" PVC Sch 80 Casing  — (15.0 - 279.0') 10.0" Borehole	(196.0 - 253.0') 54.2 buckets	(196.0 - 253.0') 54 buckets (0%) Note: Pel-Plug (TR30) 3/8"			
	MW-R-VAS- 255-260 (<0.17 U ppb 5/29/2019 12:00	Topock - Alluvium Deposits	SM		(253.0 - 279.0') Cemex #3 MESH — (8x10)	(255.0 - 275.0') 277" Sch 80 PVC (20-slot) Screen	(253.0 - 279.0') 27.3 bags	(253.0 - 279.0') 36 bags (32%) Note: Lapis Lustre Sand sea level. GW = groundwater.			

9/-	ARCA	DIS Design & for natura built asse	l and ts		Well Const	ruction Log	Sheet: 14 of 15		
	Started:	05/11/2019			_Surface Elevation:	N/A	Well ID: N	/W-R-192, MW-R-275	
I .	-	07/31/2019			_Shallow Well Elevation:				
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E		
Drilling Driller		Sonic Drilling E. Ramos / D	O'Ma	·	_Northing (NAD83):	N/A N/A	•	GW Remedy Phase 1	
Drilling		L. Amaya/ O.		<u>a</u>	_Easting (NAD83): Borehole Diameter:	4-12 inches	Location: PG&E	Topock, Needles, California	
Logge		G. Jeffers / C.		rt		90.59 ft bgs	— Proiect Number	:: RC000753.0051	
Editor:		Sean McGrar			_ Development End Date:			. 110000100.0001	
Total D		287 ft bgs			_Well Completion:				
		.º C							
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed	
 261		Topock - Alluvium Deposits	SM			C255.0 - 275.0') 277" Sch 80 PVC C20-slot) Screen			
 263							7		
								0	
_264									
 _265									
200								<b>*</b>	
_267						A N			
L _		Topock -							
_268		Weathered Bedrock -	SM						
		conglomerate				X:H:			
_269					(050 0 070 01)				
					(253.0 - 279.0') Cemex #3 MESH	(15.0 - 279.0') 10.0" Borehole	(253.0 - 279.0') 27.3 bags	(253.0 - 279.0') 36 bags (32%) Note: Lapis Lustre Sand	
_270					(8x10)				
-						H			
_271	MW-R-VAS- 269-274		•						
272	(<0.17 U ppb 5/30/2019 14:30	)							
						항 <del></del>			
_274									
<u> </u>									
_275									
_276					(275.5 - 276.5') Centralizer				
 _277		Topock -				(275.0 - 277.0')			
		Competent Bedrock -				Sump and End Cap			
278		conglomerate							
_279									
<u> </u>					(279.0 - 287.0')	(279.0 - 287.0') 6"	(279.0 - 287.0') 2.18 bags	(279.0 - 287.0') 2 bags (-8%) Note: Enviroplug Medium Chips	
280	.:_4:	000 - U-::	0-:10	\(\)\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Bentonite seal chips	Borehole		· ·	

ARCA	DIS Design & C for natural built asset	Consultancy Land S		Well Const	ruction Log	;	Sheet: 15 of 15
Date Started:	05/11/2019			_Surface Elevation:	N/A	Well ID: I	MW-R-192, MW-R-275
Date Completed:				_Shallow Well Elevation:	N/A		
Drilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&I	
_	Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller Name:	E. Ramos / D.		a	_Easting (NAD83):	N/A	Location: <u>PG&amp;I</u>	E Topock, Needles, California
Drilling Asst:	L. Amaya/ O.			_Borehole Diameter:	4-12 inches	<u> </u>	
	G. Jeffers / C.		<u>rt</u>	_Water Level Start:	90.59 ft bgs	Project Numbe	er: RC000753.0051
Editor:	Sean McGran	<u>e</u>		_Development End Date:			
Total Depth:	287 ft bgs			_Well Completion:	区 Flush Stick-up	Т	T
Groundwat Sample IE		USCS	USCS	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
281 	Topock - Competent Bedrock - conglomerate			(279.0 - 287.0') Bentonite seal chips	(279.0 - 287.0') 6" Borehole	(279.0 - 287.0') 2.18 bags	(279.0 - 287.0') 2 bags (-8%) Note: Enviroplug Medium Chips
284 		NR		End of Boring at	Borenole	bags	Note: Enviroping ividual Chips
				287.0 bgs.			

Date   Started   Difful (2013)	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	]		She	eet: 1 of	15
Nothing for the properties   Beday 2019   Cassade   Easting (NAD83)   NA									Borin	a No.:	MW-Rd	
Topolite Rig Types Personic Track Mount Office Rig Types Personic Track Mount Endowed Present 287 h bgs Project Rig GM Remedy Phase 1 Continue Page 1 Continue					-		•					
Dolling Type:   Prosenic Truck Mount   Borehole Diameter: 4-12 Inches   Location: PG&E Topock, Needles, California Orling Asst.   Campaign   Commission   Campaign	_				_	•	33):					
Delire Name:  E. Ramaya / D. Eloras  Sand McGrane  Converted to Well:  San	_		•						-		-	
Defining Assist   Lamayar   Defores   Sampling Interval:   Continuous   Signature   Project Number: RC000753.0051									Location:	PG&E 1	<u> Fopock, Needle</u>	<u>es, California</u>
Continuous   Con					-			_				
Editor: Sean McGrane Converted to Well: Version No  Sean McGrane Converted to Well: Version No  Sean McGrane Service Description Converted to Well: Version Sold Description Description  Drilling Notes Deling Flaid  1	_		•		-	-			Project N	lumber: <u>I</u>	RC000753.005	51
Some Sample ID Countedator Sample ID Countedator Sample ID Sample				art	-	-		•				
1 1 2 2 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Editor:	<u>Sean N</u>	/lcGrane		Convert	ed to V	Vell:	Yes □ No				
Topock- Allieum Person (10fr 630): very firer gained by very coarse gained, angular to standed to the server state gained by the server of the	Depth (ft) Recovery (in)			Geologic Formation	Code	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
	- 1	Samples		Topock - Alluvium Deposits  Topock - Alluvium Deposits	SW-SM		(7.0 - 14 and grad coarse pebbles subang	10YR 5/3); very fine grained to very coand; little granules to very large pebbles, are trace cobbles, angular to subround; dry; le of granite, basalt and metadiorite  4.0') Topock - Alluvium Deposits; Well gravel (SW-SM); brown (10YR 5/3); very fing grained, angular to subround; little granuli, angular to subangular; little silt; trace coular; trace mica; coarser clasts composed ular; trace mica; coarser clasts composed to 17.0') No recovery (NR)	aded sand with graves and with graves and with graves angular to subrect the grained to the grained to the grained to the grained to the grained and with graves and grained,	th silt very great to let (SM); ngular to ce mica;	(3.5 - 5.0') Lost 12" casing down hole  (13.0') 12 inch casing started to fall added 2 more feet of casing and set	
r mararianana. Gaga - oninog don ongoniognon oyotom, it - root, aga - bolow ground agrigor, dinar-gayore modifaca level. Uvv -	20	s: USCS = I	Unified Soil C	Alluvium Deposits			and gra	vel (ŚW-SM); brown (10YR 5/3); very fin grained, angular to subround; some gran	ie grained to vules to very la	very arge	n sea level <i>G</i> V	N =

AR	<b>CADIS</b>	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 2 of	15
Date Starte	d: <u>05/11/</u>	/2019	;	Surface	Eleva	ion: <u>N/A</u>	Borin	u No .	MW-Rd	
Date Comp	leted: <u>06/04/</u>	/2019		Northin	g (NAD	83): <u>N/A</u>	Borni	9 110	IVIVV-IXU	
Drilling Co.:	<u>Casca</u>	ade		Easting	(NAD	33): <u>N/A</u>	Client:	PG&E		
Drilling Met	hod: <u>Sonic</u>	Drilling		Total D	epth:	287 ft bgs	Project:	Final G\	W Remedy Ph	ase 1
Drill Rig Ty	oe: <u>Proso</u>	nic Truck Mo	unt l	Boreho	le Diam	eter: 4-12 inches	Location:	PG&E 1	Topock, Needl	es, California
Driller Nam	e: <u>E. Rar</u>	<u>mos / D. O'M</u>	ara l	Depth t	o First	Water: <u>90.59 ft bgs</u>	-			
Drilling Ass		aya/ O. Flore		-	ng Meth		Project N	umber: <u>I</u>	RC000753.00	51
Logger:		fers / C. Stev		-	ng Inter		=			
Editor:	<u>Sean</u>	<u>McGrane</u>		Conver	ted to V	Vell: ⊠ Yes □ No				
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
			Topock - Alluvium Deposits	SW-SM		pebbles, angular to subangular; little silt; trace or subangular; trace boulders, subangular; trace m composed of metadiorite; dry	ica; coarser cla	asts		(0.0 - 27.0') No water used
22 22 23 12024			Topock - Alluvium Deposits	SM		(21.0 - 24.0') Topock - Alluvium Deposits; Silty s brown (10YR 5/3); very fine grained to very coar subround; some granules to very large pebbles, subangular; little silt; trace cobbles, angular to su coarser clasts composed of metadiorite; dry	rse grained, an angular to ubangular; trac	gùlar to e mica;	0)	
L J						(24.0 - 33.0') Topock - Alluvium Deposits; Well and gravel (SW-SM); brown (10YR 5/3); very fir				
25						coarse grained, angular to subround; some gran pebbles, angular to subangular; little silt; trace co	ules to very lar	ge		
						subangular; trace mica; coarser clasts compose				
 27										
_21									(27.0 - 32.0')	(27.0 - 32.0') 10
									Core barrel and sediments in	gallons of water used; 0 gallons
28			Topock -						core hot, slow drilling due to	of water recovered: 10
			Alluvium	SW-SM		(28.5'); pulzerived boulder			tight formation	gallons of water
29			Deposits			(29'); and granules to very large pebbles, angula	er to subangula	r.	and soils falling out of core	lost
60	Na Ciarra					decrease in sand	ar to ouburiguid	''	during clean out runs	
_30	No Sieve Samples									
_	Collected									
31										
_32										
						(32'); some granules to very large pebbles, anguincrease in sand	ılar to subangu	lar;	(32.0 - 37.0') Core barrel and	(32.0 - 37.0') 5 gallons of water
33						in care			sediments in	used; 0 gallons of water
					\$.W.	(33.0 - 35.0') Topock - Alluvium Deposits; Well gravel (SW); brown (10YR 5/3); very fine graine			core hot, slow drilling due to	recovered; 5
			Topock -		8.0.	grained, angular to subround; some granules to	very large pebl	oles,	tight formation and soils falling	gallons of water lost
34			Alluvium Deposits	SW		angular to subangular; trace silt; trace mica; coa of metadiorite; dry	rser clasts con	nposed	out of core during clean out	
36						, ,			runs	
_35			<b> </b>	<del> </del>	****	(35.0 - 37.0') No recovery (NR)				
					$  \setminus /  $	,				
36				NR	X					
					/					
37	_		L	<u> </u>	<u> </u>	707.0 44.00 Tamada Allanda B		1/(0/4)	(27.0 47.01)	(27.0 40.0)\ 5
_						(37.0 - 41.0') Topock - Alluvium Deposits; Silty s brown (10YR 5/3); very fine grained to very coar	rse grained, an	gular to	(37.0 - 47.0') Slow drilling due	(37.0 - 42.0') 5 gallons of water
38						subround; some silt; little granules to very large subangular; trace clay; trace mica; coarser clast	pebbles, angulated of	ar to	to tight formation and soils falling	used; 0 gallons of water
60			Topock - Alluvium	SM		metadiorite; dry			out of core	recovered; 5
			Deposits	J SIVI					during clean out runs	gallons of water lost
40										
Abbreviatio	ns: USCS =	Unified Soil (	Classification	n Syst	em, ft =	feet, bgs = below ground surface, a	amsl = abo	ve mear	n sea level, G\	W =
-						ne laboratory reporting limit, NR = no				
I I I I I I I	., FF~ Puit	- P							Oyilik	•

represents depth to water measured during the first VAS interval

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 3 of	15
Date S	tarted	: <u>05/11/</u>	2019		Surface	Eleva	tion: N/A	Borin	a No .	MW-Rd	
Date C	omple	ted: <u>06/04/</u>	2019		Northing	g (NAD	083): <u>N/A</u>		ig 110	<u>IVIV IXA</u>	
Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD8	83): <u>N/A</u>	_ Client:	PG&E		
Drilling	Meth				Total Do	epth:	287 ft bgs	_ Project:	Final G\	<u> </u>	ase 1
Drill Ri	д Туре	e: <u>Proso</u> r	nic Truck Mou	unt	Borehol	e Dian	neter: 4-12 inches	_ Location:	PG&E T	opock, Needl	es, California
Driller			<u>nos / D. O'Ma</u>		-		Water: 90.59 ft bgs	_			
Drilling	Asst:		aya/ O. Flores		Samplin	•		_ Project N	lumber: <u>F</u>	RC000753.005	51
Logge		-	<u>fers / C. Stew</u>	<u>art</u>	Samplin	•		_			
Editor:		<u>Sean I</u>	<u> McGrane</u>		Convert	ed to \	Well: 🗵 Yes 🗌 No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
				Topock -						(37.0 - 47.0') Slow drilling due	(37.0 - 42.0') 5 gallons of water
41				Alluvium Deposits	SM					to tight formation	used; 0 gallons
41	60						(41.0 - 47.0') Topock - Alluvium Deposits; Wel			and soils falling out of core	of water recovered; 5
							and gravel (SW-SM); brown (10YR 5/3); very f coarse grained, angular to subround; some gra	nules to very la	arge	during clean out runs	gallons of water lost
42							pebbles, angular to subangular; little silt; trace of composed of metadiorite; dry; trace oxidized states.	mica: coarser d	lasts	runo	(42.0 - 270.0')
							Somposed of metadorito, any, trade oxidized ex	all III 19.			No water used
43								AU			
				Topock -							
44				Alluvium	SW-SM						
	60			Deposits							
45											
46											
47										(47.0 50.01)	
						\	(47.0 - 50.0') No recovery (NR); core bag brok	e soils fell into l	nopper	(47.0 - 52.0') Drill rods	
48						$  \setminus   /  $				chattering, slow drilling due to	
					NR	$  \bigvee  $				tight formation	
49					INK					and soils falling out of core	
										during clean out runs	
50		No Sieve									
50		Samples Collected		<u> </u>			(50.0 - 57.0') Topock - Alluvium Deposits; Wel	graded sand v	vith silt		
	48				TO		and gravel (SW-SM); brown (10YR 5/3); very f coarse grained, angular to subangular; little gra	anules to very la	arge		
51			<b> </b>				pebbles, angular to subangular; little silt; trace coarser clasts composed of metadiorite; dry	clay; trace mica	ι;		
							dearger diagraphic design for the laudionic, dry				
52										(52.0 - 54.0')	
										Slow drilling due to tight formation	
53				TI						and soils falling	
-				Topock - Alluvium	SW-SM					out of core during clean out	
54				Deposits			(54.0 57.0)) 25	blee comit		runs	
L J							(54.0 - 57.0'); some granules to very large pebl subangular; decrease in sand, no clay	ωes, angular to		(54.0 - 72.0') Drill rods	
55							•			chattering, slow drilling due to	
L	36									tight formation and soils falling	
56	55									out of core	
										during clean out runs	
57							1				
						\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	(57.0 - 60.0') No recovery (NR)			(57.0 - 60.0')	
  -  -						\ /				Core bag broke, core lost in	
58						$  \setminus /$				hopper	
<b>-</b> -	24				NR	X					
59						/ \					
						/ \					
60	/iation	e: 11808 -	Unified Sail C	laccificat	ion Synt	y \	= feet, bgs = below ground surface,	amel = ah	NA MOST	r sea lovel C	Λ/ —
wnnie/	/เลแบท	s. USUS =	Ullilled SOII C	Jassiiicat	เบเา องรโ	7111, IL =	- ieer, bys - below ground surface,	amsi - abi	ove mear	ı sea level, G	/v —

Date   District   Di	AR	CADIS	Design & Consultancy for natural and built assets		Bo	ring	Log		Sheet: 4 of	15
Northing (No. Sa.)   No.   Cascade   Easing (NADB3)   No.   No.   Cascade   Cascade   Easing (NADB3)   No.   Cascade								Boring N	No.: MW-Rd	
Project: Final GW Remedy Phase   Project					_		•	_		
Deling Name   Prosonic Truck Mount   Borehole Diameter   4-12 inches   Location: PG&E Topock, Needles, Californic Drilling Asst:   Lamayat O, Eloros   Sampling Method:   A inch x 10 ft. Core Barrel   Project Number: RC000753.0051	_				_	•	·			
Drilling Assis: L. Amaya/ Do Flores G. Jefflers / C. Stewart Sean McGrano Converted to Well:	_					•	<del>-</del>	•	•	
Drilling Assist: Cardinary C. Stewart Seam McGarne Converted to Well: Seam McGarne Converted t								Location: <u>PG</u>	&E Topock, Nee	dles, California
Segon McGrane Converted to Well:					•		<b>G</b>	_		
Editor: Sean McGrane Converted to Well: Very Sol No  Serphe D Converted to Well: Very Sol Sol Description  Drilling Notes  Drilling Fluid  Topods  Allowing Deposits  SM Topods Allowing Deposits, Will graded send with all years created and grane of SW-Sol Sol Sol Description  Drilling Rodes  Drilling Fluid  Topods Allowing Deposits  SM Topods Allowing Deposits, Will graded send with all years created and grane of SW-Sol Sol Sol Sol Sol Sol Sol Sol Sol Sol	_		•		-	-		Project Numb	ber: <u>RC000753.0</u>	051
Simple ID Concentration Sample					-	-		-		
Topock- Allowing Deposits  W-SM Depo	Editor:	<u>Sean I</u>	McGrane 		Convert	ed to \	Vell: ⊠ Yes □ No			
Topock Alluvium Deposits SW-SM SM SW-SM SM SW-SM SW-SM SW-SM Swap Swap Swap Swap Swap Swap Swap Swap	Depth (ft) Recovery (in)			Geologic Formation	Code	USCS Class	·			
Topock Alluvium Deposits  SM  Topock Alluvium Deposits (SW) by the granted to very coarse graned angular to submit of the granted to see the granted servery for present of the granted servery for granted server				Alluvium	SW-SM		and gravel (SW-SM); brown (10YR 4/3); very fill coarse grained, angular to subangular; some grapebbles, angular to subangular; little silt; trace m	ne grained to very anules to very large	Drill rods chattering, slo drilling due to tight formatior and soils fallin out of core	No water used
Topock-Altonium Deposits  SW SW Strom (10/R 53) very fine grained to very large pebble, angular to subangular, sone granules to very large pebble, angular to subangular, trace sit; trace day, trace mica dry, larger class consist of metadicitie and conglomerate to very large pebble, angular to subangular, trace sit; trace day, trace mica dry, larger (16/F), very fine grained to very large pebble, angular to subangular, ittle sit; trace mica, dry, larger class consist of metadicitie and conglomerate.  Topock-Altonium Deposits  No Sieve Samples Collected  Topock-Altonium Deposits SM SW	 63 			Alluvium	SM		brown (10YR 5/3); very fine grained to very coa subround; some silt; little granules to very large subangular; trace clay; trace mica; coarser clast	rse grained, angular pebbles, angular to	r to runs	ut
From (10YR 5/3) little brown (10YR 5/3) little brown (10YR 4/3); very fine grained to very coarse grained; so the very large pebbles, angular to subangular; ittle stilt, trace mica; dry; larger clasts consist of metadiorite and conglomerate.  Topock - Alluvium Deposits: Well graded sand with stilt pebbles. Topock - Alluvium Deposits: Well graded sand with stilt and pebbles. Topock - Alluvium Deposits: Well graded sand with stilt and gravel (SW-SM); brown (10YR 5/3) some brown (10YR 5/3), very fine grained to very coarse grained, and graded sand with stilt and gravel (SW-SM); brown (10YR 5/3) some brown (10YR 5/3) some brown (10YR 5/3) some brown (10YR 5/3), very fine grained to very coarse grained, and graded sand with stilt and gravel (SW-SM); brown (10YR 5/3) some brown (10YR 5/3) very fine grained to very coarse grained, some size of the still pebbles. Topock - Alluvium Deposits: Well graded sand with stilt and graded sand with still and grad	_			Alluvium	sw		gravel (SW); brown (10YR 5/3); very fine grained grained, angular to subangular; some granules angular to subangular; trace silt; trace clay; trace clasts consist of metadiorite and conglomerate	d to very coarse to very large pebbles e mica; dry; larger		
Deposits  Deposits  Deposits  No Sieve Samples Collected  Topock - Alluvium Deposits; Well graded sand with silt and gravel (SW-SM); brown (10YR 5/3) some brown (10YR 4/3); very fine grained to very coarse grained, angular to subangular; some of	68				SM		brown (10YR 5/3) little brown (10YR 4/3); very f coarse grained, angular to subround; some grar pebbles, angular to subangular; little silt; trace m	ine grained to very rules to very large		
and gravel (ŚW-SM); brown (10YR 5/3) some brown (10YR 4/3); very fine grained to very coarse grained, angular to subangular; some grained, angular to subangular; trace to tight formation and soils falling out of core during clean out runs  Topock - Alluvium Deposits  SW-SM  Topock - 108		Samples			S					
75_ _76_ _77_ _77_ _78_ _ 108					C		and gravel (SW-SM); brown (10YR 5/3) some beine grained to very coarse grained, angular to suparanules to very large pebbles, angular to subar cobbles, angular, trace mica; dry, larger clasts of	orown (10YR 4/3); ve ubangular; some ngular; little silt; trace	ery Slow drilling du to tight formatic and soils fallin- out of core during clean ou	pe g
	60 - 75_			Tonock -						
	76  77			Alluvium	SW-SM					
	108									
· , , , , , , , , , , , , , , , , , , ,	80									

9/-	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring L	og		She	eet: 5 of	15
Date S	Started	: 05/11/				Elevation	· · · · ·	Borin	na No.:	MW-Rd	
1	-	ted: <u>06/04/</u>				(NAD83				111111110	
Drilling	-	<u>Casca</u>				(NAD83):		_ Client:	PG&E		
Drilling			Drilling		Total D	-	287 ft bgs	_ Project:		W Remedy Ph	
Drill Ri Driller			nic Truck Mou nos / D. O'Ma				er: <u>4-12 inches</u> iter: <u>90.59 ft bgs</u>	_ Location:	PG&E	Topock, Needl	es, California
Drilling			aya/ O. Flores		-	g Method	_	<ul><li>Project N</li></ul>	lumber:	RC000753 00!	 51
Logge			<u>fers / C. Stew</u>		-	ig Interval		_ 1 10,00011	idilibei.	110000700.000	<i>7</i> I
Editor:			<b>VicGrane</b>		-	ed to Wel		_			
	>			υ <u>5</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
81	108			Topock - Alluvium Deposits	SW-SM					(72.0 - 92.0') Slow drilling due to tight formation and soils falling out of core during clean out runs	(42.0 - 270.0') No water used
	72	No Sieve Samples Collected				(Si an suu me (87	6.0 - 117.0") Topock - Alluvium Deposits; Silt W); brown (10YR 5/3); very fine grained to we gular to subround; some granules to very lar pangular; little silt; trace clay; trace mica; dry stadiorite and conglomerate "); decrease in silt, increase in sand "); moist; weak cementation  2"); some silt; little small to very large pebbles	ery coarse grai ge pebbles, an ; larger clasts c	ned, gular to	(92.0')	
93 94 95 96 97	60		MW-R-VAS- 92-97 (45 ppb) 5/13/2019 11:44	Topock - Alluvium Deposits	SM	Sul (9/ cla	pangular; wet; no clay, no cementation  1.5'); some small to very large pebbles, angu y; weak cementation; increase in silt, decrea	lar to subangul ase in sand lar to subangul	ar;	Approximate depth to water	
98 99  100 Abbrev	120 viation:	s: USCS =	Unified Soil (	Classificat	ion Svst		rease in silt, decrease in sand, weathered greaters, because in silt, decrease in sand, weathered greaters, because in sand, weathered greaters in sand, weather greaters in sand, weather greaters in sand, weather greaters in sand, we weather greaters in sand, we will be a support of the sand, which is the sand, we will be a support of the sand, which is the sand, we will be a support of the sand, which is the sand, which			n sea level. G	W =

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g	S	heet: 6 of	15
Date S	Started	: <u>05/11</u>	/2019		Surface	Elevation:	N/A	Boring No	· MW-Rd	
Date 0	Comple	ted: <u>06/04/</u>	<u>/2019</u>		Northing	g (NAD83):	N/A	_ Borning No	<u></u>	
Drilling	g Co.:	<u>Casca</u>	<u>ide</u>		Easting	(NAD83):	N/A	Client: PG&E		
Drilling	g Meth	od: <u>Sonic</u>	Drilling		Total De	epth:	287 ft bgs	Project: Final 0	<u>GW Remedy Ph</u>	ase 1
Drill R	ig Type	e: <u>Proso</u>	nic Truck Mo	unt	Borehol	e Diameter:	4-12 inches	Location: PG&E	Topock, Needl	es, California
Driller	Name	<u>E. Ra</u>	<u>mos / D. O'Ma</u>	<u>ara</u>	Depth to	o First Wate	r: <u>90.59 ft bgs</u>			
Drilling	g Asst:		aya/ O. Flore:		-	ng Method:	4 inch x 10 ft Core Barrel	Project Number	RC000753.00	51
Logge			fers / C. Stev	<u>vart</u>	-	ng Interval:	Continuous	-		
Editor	:	<u>Sean</u>	<u>McGrane</u>		Convert	ed to Well:				<b>T</b>
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
101102103104105106107	- 120									(42.0 - 270.0') No water used
108 109 110 111 112 113 114	120	No Sieve Samples Collected		Topock - Alluvium Deposits	SM	(112. granı	; pulverized weathered metadiorite boulder 5') brown (10YR 5/3) trace reddish brown ( les to very large pebbles, angular to subar mentation, trace mottling	(2.5YR 5/4); some		
115 116 117 118 119	- 60		MW-R-VAS- 117-122 (5.8 ppb) 5/14/2019 10:14	Topock - Alluvium Deposits	GM	(117. (GM) small graine	; decrease silt, increase granules and peb 0 - 128.5') Topock - Alluvium Deposits; Silt brown (10YR 5/3) little reddish brown (2.5 cobbles, angular to subangular; some very ad sand, angular to subround; little silt; trac osed of metadiorite; wet; silt nodules	ty gravel with sand 5YR 5/4); granules to y fine to very coarse	(115.0 - 122.0') Soft drilling	
120 Abbre	viation	s: USCS =	Unified Soil (	Classificati	ion Syste	em ft = feet	bas = below around surface.	amsl = above me	an sea level G	\/\/ =

9/-	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring L	og		She	et: 7 of	15
Date S						Elevation		Borin	a No.:	MW-Rd	
	•	ted: <u>06/04/</u>				g (NAD83		_			
Drilling		<u>Casca</u>			_	(NAD83)	N/A		PG&E		
Drilling			•			-	287 ft bgs			N Remedy Ph	
Drill Ri			nic Truck Mou				r: <u>4-12 inches</u>	_ Location:	PG&E T	opock, Needl	<u>es, California</u>
Driller			<u>nos / D. O'Ma</u>		-		ter: <u>90.59 ft bgs</u>				
Drilling			aya/ O. Flores		•	ng Method		_ Project N	umber: <u>F</u>	RC000753.00	51
Logge			fers / C. Stew	<u>art</u>	-	ng Interva		_			
Editor:		<u>Sean I</u>	McGrane		Conver	ted to We	: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
 _121_  _122_	60		MW-R-VAS- 117-122 (5.8 ppb) 5/14/2019 10:14							(115.0 - 122.0') Soft drilling	(42.0 - 270.0') No water used
	60			Topock - Alluvium Deposits	GM		5'); and very fine to very coarse grained san angular; decrease in granules to cobbles	d, angular to		03	
126 								1	) '		
 _129_  _130_ 		No Sieve Samples Collected		Topock - Alluvium Deposits	SM	(S) grato to	8.5 - 130.5') Topock - Alluvium Deposits; Sil 1); brown (10YR 5/3) trace reddish brown (2 ined to very coarse grained, angular to suba ery large pebbles, angular to subangular; so rser clasts composed of metadiorite; wet 0.5 - 137.5') Topock - Alluvium Deposits; Sil	.5YR 5/4); very ngular; some gi ome silt; trace m	fine ranules ica;		
131 132  133	120			8	C	(G sn	brown (10YR 5/3) trace reddish brown (2 all cobbles, angular to subangular; and very ned sand, angular to subangular; little silt; trests composed of metadiorite; wet; silt nodules	2.5YR 5/4); gran fine to very coa race mica; coars	rse		
134  135  136				Topock - Alluvium Deposits	GM						
 137 				Topock -			7.5 - 138.5') Topock - Alluvium Deposits; Sa	andy silt with ar	avel		
138  139	120			Alluvium Deposits Topock -	ML	(M lar gra ∴	.); brown (10YR 5/3); medium plasticity; som e pebbles, angular to subangular; some ven ined sand, angular to subangular; trace mica nposed of metadiorite; wet; soft to medium st 8.5 - 153.0') Topock - Alluvium Deposits; Sil	ne granules to v y fine to very co a; coarser clasts tiff	ery parse		
 140 Abbrev	/iation:	s: USCS =	Unified Soil C	Alluvium Deposits Classificati	SM on Syste	(S gra	et, bgs = below ground surface,	.5YR 5/4); very ngular; some gr	fine ranules	n sea level, G\	N =

9/-	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring L	og	SI	neet: 8 of	15
Date S	Started	05/11/	2019		Surface	Elevation	: <u>N/A</u>	Boring No.	: MW-Rd	
	•	ted: <u>06/04/</u>				g (NAD83		_		
Drilling		<u>Casca</u>				(NAD83)		_ Client: PG&E		
Drilling			Drilling		Total De	•	287 ft bgs	-	GW Remedy Ph	
Drill Ri			<u>nic Truck Μοι</u>				er: 4-12 inches	_ Location: <u>PG&amp;E</u>	Topock, Needl	es, California
Driller			mos / D. O'Ma		•		ter: <u>90.59 ft bgs</u>			
Drilling			aya/ O. Flores		•	ig Method		_ Project Number:	RC000753.00	51
Logge			fers / C. Stew	<u>art                                    </u>	-	ıg Interva		_		
Editor:		<u>Sean</u>	McGrane		Convert	ed to We	I: X Yes No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	nscs Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
	120			Topock - Alluvium Deposits	SM	cc gr (1	very large pebbles, angular to subangular; litt arser clasts composed of metadiorite; wet, int inule to pebble lenses (1'); some silt; decrease in sand, increase in (2.5'); little silt; increase in sand, increase in	terbeded silt and granules and pebbles	03	(42.0 - 270.0') No water used
	120	No Sieve Samples Collected	MW-R-VAS- 151-156 (<0.033 U ppb) 5/15/2019 10:20	Topock - Alluvium Deposits	GM		9'); some silt; decrease in sand  3.0 - 157.0') Topock - Alluvium Deposits; Sil  M); brown (10YR 5/3) little reddish brown (5Y  y large pebbles, angular to subangular; some arse grained sand, angular to subangular; littl arser clasts composed of metadiorite; wet; int ses, trace reddish brown (2.5YR 5/4)	e very fine to very le silt; trace mica; terbeded silt and sand	(151.0 - 156.0') Cave in prevented sampler from being set at 152 to 157 ft. bgs	
158 159 160	120	o: 11808 -	Unified Sail C	Topock - Alluvium Deposits	GW	sa to su m	67.0 - 168.5') Topock - Alluvium Deposits; W nd (GW); brown (10YR 4/3); granules to very subangular; and very fine to very coarse grai pangular; trace silt; trace mica; coarser clasts tadiorite; wet; silt nodules	/ large pebbles, angular ned sand, angular to s composed of	(157.0 - 167.0') Soft drilling	M =
Annie,	viatiOf	s. USUS =	Utililed Still C	nassiiical	ion Syste	7111, IL – IE	er, bys – below ground surface,	amsi – above me	an Sea level, G	v v —

Date Start det.   OSC1192019	PARCADIS Design & Consultancy for natural and built assets					Boring Log				Sheet: 9 of 15			
Nothing Note   Cassade   Easting (NADes)   NA	Date S	Started	: <u>05/11/</u>	2019		Surface	Elevation:	N/A	Borin	u No .	MW-Rd		
Transport   Sonic Deliting   Transport   Sonic Deliting   Transport   Transp							- '		_		10177 170		
Doll Right Type:   Prosonic Truck Mount   Borehole Diameter: 4-12 Inches   Location: PG&E Topock, Needles, California Orling Nast:   LAmaws/D. Orling Nast:   LAmaws/D. Orling Nast:   LAmaws/D. Elores   Sampling Method:   Alinch x.10 ft. Core Barrel   Project Number: BC000753.0051	_								_				
Definition   Def	_	-		•					-		•		
Delling Assist   _Amayu O. Flores   Sampling Method:   Amount 10 ft Core Barrel   Project Number: BC000753.0051									_ Location:	PG&E T	opock, Needle	<u>es, California</u>	
Continue						-		_	_				
Convented to Well: Yes No Sergel D Solve Sample ID Solve ID So	_	•		-		-	-		_ Project N	lumber: <u>F</u>	RC000753.005	51	
Somple ID  Countralater Sample					<u>art</u>	-	-		_				
161	Editor:		<u>Sean r</u>	vicGrane		Conven	ted to vveii:	Yes   No					
Soft chiling  No water used  Topods  Allowium Deposits  Fig.  160.  161.  162.  163.  164.  165.  166.  167.  168.  169.  170.  Samples Collected  Topods Allowium Deposits Sity sand allo growd  Soft paid to submiguize grained to very conver grained, angular to submiguize pathere is very conver grained, angular to submiguize the pather into grained to very converse grained, angular to submiguize the submiguize of grained to submiguize pathere is pathered to very converse grained. The submiguize th	Depth (ft)	Recovery (in)			Geologic Formation	nscs Code	USCS Class	Soil Description			-	_	
162 163 164 165 166 166 167 168 170 188 170 188 170 188 170 188 170 170 170 170 170 170 170 170 170 170											(157.0 - 167.0') Soft drilling		
162 163 164 165 166 166 167 168 169 169 170 170 180 180 180 180 180 180 180 180 180 18	_161_												
163. 164. 165. 166. 167. 168. 169. 170. 170. 170. 170. 171. 172. 172. 173. 174. 175. 176. 177. 177. 177. 177. 177. 177. 177													
163. 164. 165. 166. 167. 168. 169. 170. 170. 170. 170. 171. 172. 172. 173. 174. 175. 176. 177. 177. 177. 177. 177. 177. 177	_162_												
Topock-Alluvium Deposits OW  168 - 170 (7) Topock-Alluvium Deposits Silly sand with gravel (SM), boxer (7.57K 4/ll), very fine grained to very coranse grained, angular to subangular, steer grained so very stope periodes, angular to subangular, steer grained so very stope periodes, angular to subangular, steer grained so very stope periodes, angular to subangular, steer grained gravel to people ensees (177), some silt-see debtes, angular to subangular, increase in granules and poblets, angular to subangular, increase in granules and granules, and poblets, angular to subangular, increase in granules and poblets, angular to subangular, increase in granules and granules, and													
Topock-Alluvium Deposits OW  168 - 170 (7) Topock-Alluvium Deposits Silly sand with gravel (SM), boxer (7.57K 4/li), very fine grained to very coranse grained, angular to subangular, steer grained so very stope periodes, angular to subangular, steer grained so very stope periodes, angular to subangular, steer grained so very stope periodes, angular to subangular, steer grained gravel to people ensees (177), some silt-see debtes, angular to subangular, increase in granules and poblets, angular to subangular, increase in granules and granules, and poblets, angular to subangular, increase in granules and poblets, angular to subangular, increase in granules and granules, and	_163_												
Topock Alluvium Deposits GW  Topock Alluvium Deposits, Sity sand with gravel GW State of Collected Collected  Topock Alluvium Deposits, Sity sand with gravel GW State of Collected Collec		120						4 7 4					
Alturium Deposits    166	_164_	120			Topock -								
168.  169.  170.  188.  170.  170.  170.  170.  170.  171.  171.  170.					Alluvium	GW							
168.  169.  170.  No Sieve Samples Collected  171.  172.  174.  175.  176.  177.  177.  177.  178.  179.  179.  170.  170.  177.  170.  17	_165_				Deposits								
168.  169.  170.  No Sieve Samples Collected  171.  172.  174.  175.  176.  177.  177.  177.  178.  179.  179.  170.  170.  177.  170.  17													
168  169  169  No Sieve Samples Collected  Topock - Alluvium Deposits Silty sand with gravel samples Collected  171  172  120  175  176  177  177  178  178  179  179  170  170  170  170  170  170	166												
168  169  169  No Sieve Samples Collected  Topock - Alluvium Deposits Silty sand with gravel samples Collected  171  172  120  175  176  177  177  178  178  179  179  170  170  170  170  170  170	_												
170 No Sieve Samples Collected  Topock Alluvium Deposits Outlet, increase in sand  Topock Alluvium Deposits  171 172 175 176 1770 1770 1770 1770 1770 1770 1770	167												
170 No Sieve Samples Collected  Topock Alluvium Deposits Outlet, increase in sand  Topock Alluvium Deposits  171 172 175 176 1770 1770 1770 1770 1770 1770 1770													
170	168												
170							(400.5	470 00 T	1 20				
No Sieve Samples Collected  170  171  172  173  174  175  176  177  177  178  179  170  170  170  170  170  170  170	_169_						(SM); I	prown (7.5YR 4/4); very fine grained to ve	ery coarse gra	ined,			
Samples Collected  170							to suba	angular; little silt; trace mica; coarser clas	ts composed o				
granules and pebbles, decrease in sand  [172] 120  [173] Topock - Alluvium Deposits  [174] Multiple Deposits  [175] Multiple Deposits  [176] Multiple Deposits  [177] Multiple Deposits  [177] Multiple Deposits  [177] Multiple Deposits  [177] Multiple Deposits  [178] Multiple Deposits  [179] Multiple Deposits  [170] Multi	_170_		Samples				I : 1 : H : H			a in			
172 120  173 Topock-Alluvium Deposits  SM (173'); pulverized boulder fragments  (174'); increase in silt, decrease in sand  (174'); increase in silt, decrease in sand  (177.0 - 179.0') dark yellowish brown (10YR 4/4) some brown (7.5YR 4/3); trace clay; mottled; iron oxide staining; decrease in granules and pebbles, no cobbles  180 Topock-Alluvium Deposits; Well graded sand with silt and gravel (SW-SM); dark yellowish brown (10YR 4/4) some brown (7.5YR 4/3); very fine grained to very coarse grained, angular			Collected						ingular; increas	se in			
173 Topock - Alluvium Deposits  175 Topock - Alluvium Deposits  177 Topock - Alluvium Deposits  178 Topock - Alluvium Deposits  179 Topock - Alluvium Deposits  180 SW-SM (173'); pulverized boulder fragments  (174'); increase in silt, decrease in sand  (177.0 - 179.0') dark yellowish brown (10YR 4/4) some brown (7.5YR 4/3); trace clay; mottled; iron oxide staining; decrease in granules and pebbles, no cobbles  180 SW-SM (179.0 - 180.0') Topock - Alluvium Deposits; Well graded sand with Silt and gravel (SW-SM); dark yellowish brown (10YR 4/4) some Deposits brown (7.5YR 4/3); very fine grained to very coarse grained, angular	_171_												
173 Topock - Alluvium Deposits  175 Topock - Alluvium Deposits  177 Topock - Alluvium Deposits  178 Topock - Alluvium Deposits  179 Topock - Alluvium Deposits  180 SW-SM (173'); pulverized boulder fragments  (174'); increase in silt, decrease in sand  (177.0 - 179.0') dark yellowish brown (10YR 4/4) some brown (7.5YR 4/3); trace clay; mottled; iron oxide staining; decrease in granules and pebbles, no cobbles  180 SW-SM (179.0 - 180.0') Topock - Alluvium Deposits; Well graded sand with Silt and gravel (SW-SM); dark yellowish brown (10YR 4/4) some Deposits brown (7.5YR 4/3); very fine grained to very coarse grained, angular				l `									
Topock - Alluvium Deposits  SM  (173'); pulverized boulder fragments  (174'); increase in silt, decrease in sand  (174'); increase in silt, decrease in sand  (177.0 - 179.0') dark yellowish brown (10YR 4/4) some brown (7.5YR 4/3); trace clay; mottled; iron oxide staining; decrease in granules and pebbles, no cobbles  Topock - Alluvium Deposits  Topock - Alluvium Deposits (179.0 - 180.0') Topock - Alluvium Deposits; Well graded sand with silt and gravel (SW-SM); dark yellowish brown (10YR 4/4) some brown (7.5YR 4/3); very fine grained to very coarse grained, angular	_172_	120											
Topock - Alluvium Deposits  SM  (173'); pulverized boulder fragments  (174'); increase in silt, decrease in sand  (174'); increase in silt, decrease in sand  (177.0 - 179.0') dark yellowish brown (10YR 4/4) some brown (7.5YR 4/3); trace clay; mottled; iron oxide staining; decrease in granules and pebbles, no cobbles  Topock - Alluvium Deposits  Topock - Alluvium Deposits (179.0 - 180.0') Topock - Alluvium Deposits; Well graded sand with silt and gravel (SW-SM); dark yellowish brown (10YR 4/4) some brown (7.5YR 4/3); very fine grained to very coarse grained, angular													
Topock - Alluvium Deposits  SM (174'); increase in silt, decrease in sand  (177.0 - 179.0') dark yellowish brown (10YR 4/4) some brown (7.5YR 4/3); trace clay; mottled; iron oxide staining; decrease in granules and pebbles, no cobbles  Topock - Alluvium Deposits; Well graded sand with silt and gravel (SW-SM); dark yellowish brown (10YR 4/4) some brown (7.5YR 4/3); very fine grained to very coarse grained, angular	_173_						(173')	nulverized houlder fragments					
Deposits  (174'); increase in silt, decrease in sand  (174'); increase in silt, decrease in sand  (175						CM		parvonzoa boardor magmonto					
	174					SIVI	(174')	increase in silt decrease in sand					
177													
177	175												
177													
- 178 120	_176_												
- 178 120	-												
4/3); trace clay, mottled; iron oxide staining; decrease in granules and pebbles, no cobbles  120 179 Topock - Alluvium Deposits; Well graded sand with silt and gravel (SW-SM); dark yellowish brown (10YR 4/4) some brown (7.5YR 4/3); very fine grained to very coarse grained, angular	_177						(177.0	- 179.0') dark yellowish brown (10YR 4/4	4) some brown	(7.5YR			
Topock - Alluvium Deposits; Well graded sand with Alluvium Deposits SW-SM Silt and gravel (SW-SM); dark yellowish brown (10YR 4/4) some brown (7.5YR 4/3); very fine grained to very coarse grained, angular	-						4/3); tr	ace clay; mottled; iron oxide staining; dec					
Topock - Alluvium Deposits	178						pebble	c, cobbico					
Topock - Alluvium Deposits   (179.0 - 180.0') Topock - Alluvium Deposits; Well graded sand with SW-SM silt and gravel (SW-SM); dark yellowish brown (10YR 4/4) some brown (7.5YR 4/3); very fine grained to very coarse grained, angular	-	120											
Alluvium Deposits  Alluvium Deposits  Alluvium Deposits  SW-SM); dark yellowish brown (10YR 4/4) some brown (7.5YR 4/3); very fine grained to very coarse grained, angular	179				Topock -		(179.0	- 180.0') Topock - Alluvium Deposits: W	ell graded san	d with			
18()	-				Alluvium	SW-SM	silt and	l gravel (SW-SM); dark yellowish brown (	(10YR 4/4) sor	ne			
	180 Abbrev	uiation:	s: USCS =	Unified Soil C		ion Syste	• . • . • <u> </u> • <u>.</u> •	, , , , ,	•	ŭ	ı sea level. G\	N =	

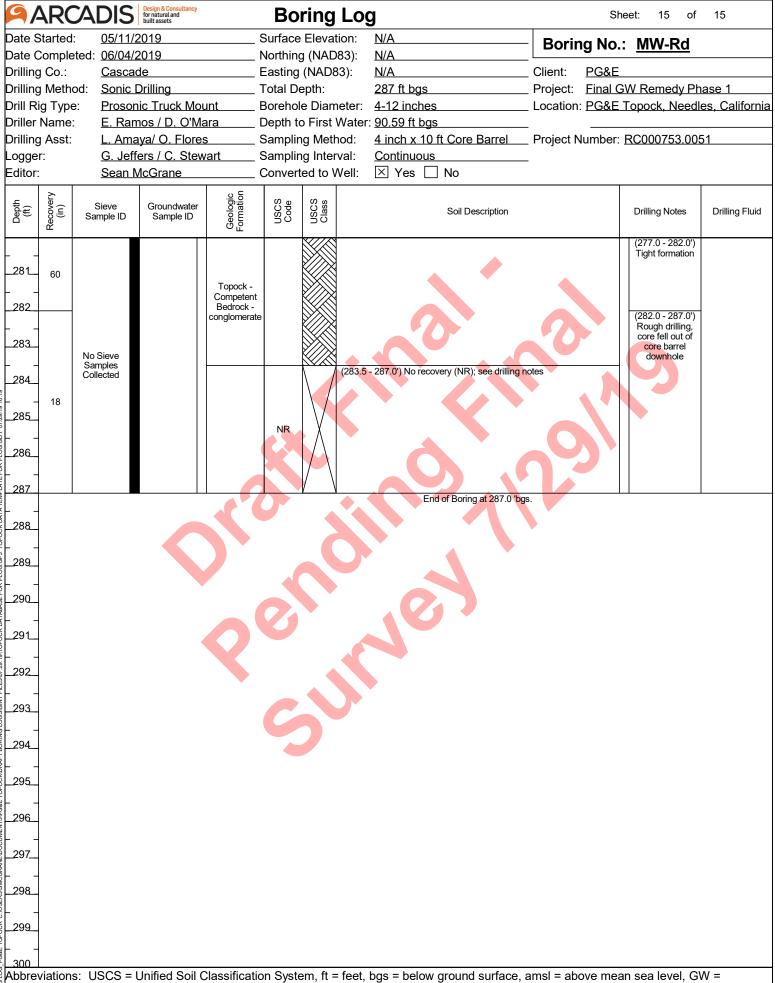
9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	rin	J Log		She	eet: 10 of	15
	Started				Surface			Borin	g No.:	MW-Rd	
		ted: <u>06/04/</u>			Northing		•				
Drilling		<u>Casca</u>			_	•	•	Client:	PG&E		
_	Meth		•			•	287 ft bgs	-		W Remedy Ph	
	g Type						meter: 4-12 inches	Location:	PG&E	Topock, Needl	es, Californi
	Name		mos / D. O'M		=		Water: 90.59 ft bgs	Dania at N		2000252	-4
_	, Asst:		aya/ O. Flore		Samplin	-		. Project N	umber: <u>I</u>	RC000753.008	01
Logge Editor:			fers / C. Stev		Samplir Convert	-					
Editor.		<u>Sean i</u>	McGrane		Conven	eu lo	vveii. 🛆 fes 🗌 No				Ι
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
				Topock - Alluvium	SM		to subangular; some granules to very large pebb subangular; little silt; trace cobbles, angular to su				(42.0 - 270.0') No water used
181				Deposits	""		coarser clasts composed of metadiorite; wet; mo (180.0 - 181.0') Topock - Alluvium Deposits; Silt		avol		
_							(SM); brown (10YR 4/3) little brown (7.5YR 4/3);	very fine grai	ned to		
_182_							: very coarse grained, angu <mark>lar to</mark> subangular; som ∴ large pebbles, angu <mark>lar to</mark> sub <mark>ang</mark> ular; little silt; tra	ne granules to ace mica; coar	very ser		
				Topock -	N		clasts composed of metadiorite; wet; mottled; into	erbeded silt ar	d		
				Alluvium Deposits	ML		: (181.0 - 182.0'); some silt; trace clay; iron oxide	staining; decre	ease in		
_100							sand (182.0 - 183.0') Topock - Alluvium Deposits; Sar	ndy eilt with ar	avel		
	120						(ML); brown (7.5YR 4/3); low plasticity; some gra	anules to very	large		
_104							pebbles, angular to subangular; some very fine t     sand, angular to subround; trace cobbles, suban     sand, angular to subangular; trace cobbles, subangular	igular; coarser	clasts		
405							composed of metadiorite; wet; stiff to very stiff; woxide staining; trace weathered granules and pel		ion; iron		
185_							(183.0 - 247.0') Topock - Alluvium Deposits; Silt	y sand with gr	avel		
-					2.31		∷ (SM); brown (7.5YR 4/3) some br <mark>own</mark> (10YR 5/3 ∵ very coarse grained, <mark>ang</mark> ular to subangular; som	ne granules to	very		
_186							: large pebbles, angular to subangular; some silt; t : to subangular; trace mica; coarser clasts compo	trace cobbles,	angular		
-							wet; laminated; weak cementation; little weathere	ed g <mark>ran</mark> ules an	d d		
_187							: pebbles, interbeded silt and granule to cobble ler ∴ (186'); dry; for 0.5 ft.				
_				1			(187'); decrease in silt, increase in granules and	pebbles			
_188					T					(188.0 - 207.0')	
_										Drill rod broke	
_189										off during during reaming, was	
_	60									retrieved to continue drilling	
190_		No Sieve Samples									
_		Collected									
_191											
_			•	Topock - Alluvium	SM						
192				Deposits	J SIVI						
_193											
100_							(193'); increase in sand, decrease in silt, no cem	nentation, no			
104			MW-R-VAS-				. lammadon 				
_194			192-197 (<0.033 U								
405	60		` ppb)								
_195			5/16/2019 09:55				3				
-											
196_											
-											
_197				-							
-							3				
198_							: (198'); increase in silt, decrease in granules and	nebblos			
_	120						.] (190 ), increase in siit, decrease in grandies and	hennigs			
199_											
_											
200							<u> </u>				
	viation	s: USCS =	Unified Soil (	Classification	on Syste	em, ft	= feet, bgs = below ground surface, a	amsl = abo	ve mear	n sea level, G	w =

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 11 of	15
Date S	Started	: <u>05/11/2</u>	2019		Surface	Elevati	on: <u>N/A</u>	Borin	a No:	MW-Rd	
		eted: <u>06/04/2</u>			Northing	- '	•			111111111111111111111111111111111111111	
Drilling	-	Casca			Easting			Client:	PG&E		
Drilling			-		Total De	-	287 ft bgs	-		N Remedy Ph	
Drill R			nic Truck Mou				eter: 4-12 inches	Location:	PG&E T	opock, Needle	<u>es, California</u>
Driller			nos / D. O'Ma				Vater: 90.59 ft bgs		. —		
Drilling	•		aya/ O. Flores		Samplin	-		Project N	iumber: <u>F</u>	RC000753.005	01
Logge Editor:			ers / C. Stew McGrane	art	Samplir Convert	-					
Luitoi.		<u>Sean N</u>			Conven	.eu io vi	/eli.				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	nscs Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
	120						(200'); and silt; decrease in granules to pebbles  (205'); some silt; increase in granules and pebble	es C		(188.0 - 207.0') Drill rod broke off during during reaming, was retrieved to continue drilling	(42.0 - 270.0') No water used
208 209 210 211 212 213 214 215	120	No Sieve Samples Collected		Topock - Alluvium Deposits	SM		(207'); trace clay; decrease in sand  (215'); some silt; increase in silt, decrease in sar	nd		(207.0 - 227.0') Soft drilling (10" casing)	
_216_ 217 218							(217'); decrease in silt, increase in sand, increas pebbles, no clay, silt nodules	se in granules	s and		
 _219  220	120										
	viation	s: USCS = I	Unified Soil C	Classificat	ion Syste	em, ft =	feet, bgs = below ground surface, a	ımsl = abo	ove mear	n sea level, G\	N =

PARCADIS Design & Consultancy for natural and built assets					Во	ring Lo	g	Sheet: 12 of 15			
Date S	tarted	: <u>05/11/</u>	/2019		Surface	Elevation:	N/A	Borin	a No .	MW-Rd	
	•	ted: <u>06/04</u>	/2019		Northing	g (NAD83):	N/A		19 110	<u>IVIVV-IXA</u>	
Drilling	Co.:	Casca	ide		Easting	(NAD83):	N/A	_ Client:	PG&E		
Drilling	Meth		Drilling		Total D	-	287 ft bgs	_ Project:		N Remedy Ph	
Drill Ri			<u>nic Truck Μοι</u>				4-12 inches	_ Location	: <u>PG&amp;E T</u>	opock, Needl	es, California
Driller			<u>mos / D. O'Ma</u>				r: <u>90.59 ft bgs</u>	_			
Drilling			aya/ O. Flores		-	ng Method:	4 inch x 10 ft Core Barrel	_ Project N	lumber: <u>F</u>	RC000753.005	51
Logge			fers / C. Stew		-	ng Interval:	Continuous	_			
Editor:		Sean	McGrane		Conven	ed to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
	120					(225)	; little silt; increase in granules and pebble			(207.0 - 227.0') Soft drilling (10" casing)	(42.0 - 270.0°) No water used
228 229 230 231 232	60	No Sieve Samples Collected	MW-R-VAS- 227-232 (<0.033 U ppb) 5/17/2019 10:05	Topock - Alluvium Deposits	SM		brune /7 EVD A/A) and raddish brane / n		A/EVD	(227.0 - 232.0') Picked sample location based on lithology (227.0 - 267.0') Soft drilling (10" casing)	
<u> </u>				<b>Y</b>		4/4), a	brown (7.5YR 4/4) and reddish brown / mand granules to very large pebbles, angula	ar to subangula	n(5YR ar; trace		
_233_						cobble	es, angular to subangular; decrease in silt	, mottled			
						(222)	5'); pulverized boulder fragments within sil	t matrix 1 foot	thick		
_234_						(200.)	o, partoneda bodidor magmionio wililli sii		. J. HOR		
_235_											
_236_	180										
_237											
_238_											
-											
_239_											
						(239.5	5'); some granules to very large pebbles, a	angular to suba	angular;		
240 Abbre\	/iation:	s: USCS =	Unified Soil C	L Classificati	on Syste	em, ft = feet	, bgs = below ground surface,	amsl = abo	ove mear	n sea level, G\	N =

ARCADIS Design & Consultancy for natural and built assets  Boring Log  Sheet:	13 of 15
Date Started: 05/11/2019 Surface Elevation: N/A Boring No.: M	/W-Rd
Date Completed: <u>06/04/2019</u> Northing (NAD83): <u>N/A</u>	iiii ita
Drilling Co.: <u>Cascade</u> Easting (NAD83): <u>N/A</u> Client: <u>PG&amp;E</u>	
·	Remedy Phase 1
	<u>ock, Needles, California</u>
Driller Name: <u>E. Ramos / D. O'Mara</u> Depth to First Water: <u>90.59 ft bgs</u>	
Drilling Asst: L. Amaya/ O. Flores Sampling Method: 4 inch x 10 ft Core Barrel Project Number: RC0	000753.0051
Logger: G. Jeffers / C. Stewart Sampling Interval: Continuous	
Editor: Sean McGrane Converted to Well: X Yes No	T
	illing Notes Drilling Fluid
-	27.0 - 267.0') (42.0 - 270.0') ft drilling (10" No water used casing)
242	
Topock - Alluvium SM	
245	
246	
247	
o \( \bigcup \left( \frac{247.0 - 258.0'\) Topock - Alluvium Deposits; Silty gravel with sand o \( \bigcup \left( \frac{6(M)}{3}\); brown (7.5YR 4/4) and reddish brown / moderate brown(5YR 1/4/4) gravular to subparellar; and year, fine	
248	
249 lenses	
No Sieve Samples	
Collected	
252 120 Topock - Alluvium GM	
Deposits Deposits	
254	
256(256'); 1 foot thick very saturated zone	
255-260 (<0.17 U	
$\lceil \ \rceil \   \ \square \   ppb \rangle $	
12:00 (258.0 - 261.5') Topock - Alluvium Deposits; Silty sand with gravel	
120 259 Topock - Alluvium SM SM (SM); brown (7.5YR 4/4); very fine grained to very coarse grained, angular to subangular; some granules to very large pebbles, angular to subangular; osme silt; trace cobbles, angular to subangular; trace	
Deposits  Deposits  Deposits  Deposits  Granules and pebbles, interbeded silt and granule to pebble lenses,  granular increase in silt with depth	
260	ea level, GW =

90	RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet: 14 of	15
Date St	tarted	05/11/	2019		Surface	Eleva	ion: N/A	Boring	No.: MW-Rd	
	•	ted: <u>06/04/</u>			Northing		•			
Drilling		<u>Casca</u>			Easting	`	•		G&E	
Drilling					Total De	-	287 ft bgs	-	inal GW Remedy Ph	
Drill Rig			nic Truck Mou				eter: 4-12 inches	Location: P	G&E Topock, Needl	<u>es, California</u>
Driller N			nos / D. O'Ma		=		Water: 90.59 ft bgs	Dualaat Nive	-h DC000752 000	-4
Drilling Logger:			aya/ O. Flores fers / C. Stew		Samplir Samplir	-		. Project Nur	nber: <u>RC000753.003</u>	) I
Editor:			McGrane		Convert	-		-		
Luitor.		<u> </u>	VICCIANC		T		veii. E. 165 E. 146			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
261				Topock - Alluvium Deposits	SM		(261'); pulverized boulder fragments		(227.0 - 267.0') Soft drilling (10" casing) (247.0 - 274.0') Smooth drilling	(42.0 - 270.0') No water used
262							(261.5 - 274.5') Topock - Weathered Bedrock - sand with gravel (SM); reddish brown / moderate trace red / moderate reddish brown (10R 4/6); ve	e brown(5YR 4/4) ery fine grained to	very Smooth drilling	
	100						coarse grained, angular to subangular; some gra pebbles, angular to subangular; some silt; trace coarser clasts composed of metadiorite; wet; we interbeded silt and granule to pebble lenses	clay; trace mica;	ge T T S	
_264_	120								7	
_265_									(265.0 - 267.0') Tight formation	
_266_										
_267							(267'); increase in silt, no clay		(267.0 - 279.0') Tight and rough	
_268_				Topock - Weathered Bedrock - conglomerat	SIVI				drilling (10" casing)	
_269							(268.5'); little silt; trace cobbles, angular to suba sand, increase in granules to cobbles	ngular; increase i	n	
_270_		No Sieve Samples Collected					(270'); weathered metadiorite		(270.0 - 279.0') Formation	(270.0 - 279.0') 800 gallons of
_271_			MW-R-VAS- 269-274 (<0.17 U				(271'); increase in sand, increase silt, decrease pebbles, weathered fractured boulder of metadic	in granules and orite	collapse after pulling 10" casing up 10 ft	water used; 0 gallons of water recovered; 800 gallons of water
_272_	120		ppb) 5/30/2019 14:30							lost
_273_										
_274_									(274.0 - 279.0') Tight and rough	
_275							(274.5 - 283.5') Topock - Competent Bedrock - brown / moderate brown(5YR 4/4); moist to dry;	conglomerate; red friable	ddish drilling (10" casing)	
_276										
277_				Topock - Competent			(0771), day		(077.0000.0")	
<u> </u>				Bedrock -			(277'); dry		(277.0 - 282.0') Tight formation	
_278_				conglomerat	E					
-	60									
_279_										
-										
280 Abbrev	iations	s: USCS =	Unified Soil C	L Classificati	on Svste	<u>w///</u> em, ft =	feet, bgs = below ground surface, a	amsl = above	e mean sea level. G\	N =



9/	<b>ARC</b>	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 1 of	8
Date S						Elevation:	N/A	Borir	na No.:	MW-Rs	
	-	ted: <u>06/17/</u> 2				g (NAD83):	N/A	_		<u></u>	
Drilling		Casca				(NAD83):	N/A	_ Client:	PG&E		
Drilling			-		Total D	-	143 ft bgs	_ Project:		W Remedy Pr	
Drill R Driller			nic Truck Moi Ramos	unt			10-12 inches : 90.27 ft bgs	_ Location	: PG&E	Fopock, Needl	es, California
Drilling			aya/ O. Flore:	•	-	ng Method:	4 inch x 10 ft. Core Barrel	– Project N	Jumber: I	RC000753 004	 51
Logge	-		ers / A. Macl			ng Interval:	Screen Intervals	_ 1 10,0001	varriber. <u>1</u>	10000733.00	J 1
Editor			//cGrane	•	-	ted to Well:		_			
				ی ج							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
_ 1 1 1 1	60 60 96	No Sieve Samples Collected			NR	(0.0 - i boring	37.0') (NR); Core not collected or logged log MW-Rd for lithology	, no recovery, s	See	(15.0') 12 inch conductor casing dropped and mud tub seal had to be reset  (15.0') 12 inch casing dropped to 15 ft. bgs reset mud tub seal, driller indicated formation was collapsing @ 17 ft. bgs, when examining core, ~1 ft boulder was observed, will pay close attention to borehole when installing well	(0.0 - 133.0') No water used
20 Abbre	viation	s: LISCS = I	Unified Soil (	lassificat	ion Syst	em ft = feet	bas = below around surface.	amsl = ah	ove mear	n sea level G	\/\/ =

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval MW-Rd, VAS collected during drilling MW-Rd

9/	<b>ARC</b>	ADIS	for natural and built assets		Bo	ring Lo	g		Sh	eet: 2 of	8
Date S	Started	06/16/2	2019		Surface	Elevation:	N/A	Borin	na No.	MW-Rs	
	-	ted: <u>06/17/2</u>				g (NAD83):	N/A	_		<u> </u>	
Drilling		Casca				(NAD83):	N/A	_ Client:	PG&E		
Drilling					Total De		143 ft bgs	_ Project:		W Remedy Pr	
Drill Ri	• • •		<u>ic Truck Μοι</u>			e Diameter:	10-12 inches	_ Location	: PG&E	Topock, Need	es, California
Drilling			<u>kamos</u> iya/ O. Flores		-	g Method:	: 90.27 ft bgs 4 inch x 10 ft. Core Barrel	- Project N		RC000753.00	51
Logge	-		<u>ers / A. Mack</u>		-	ig Interval:	Screen Intervals	_ 1 10,0001	varriber.	10000733.00	<u> </u>
Editor:			/IcGrane			ed to Well:		_			
	>			٥ <u>۶</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
21	108									(27.01) Tight	(0.0 - 133.0') No water used
	120	No Sieve Samples Collected		<b>Q</b>	NR					(27.0') Tight formation	
3838	60										
IAhhre	viation	<ul><li>USCS = I</li></ul>	Initied Soil C	:lassificati	on Syste	m tt = feet	bas = below around surface.	amsl = ah	ove mea	n sea level. G	vv =

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval MW-Rd, VAS collected during drilling MW-Rd

9/	<b>AKC</b>	ADIS	for natural and built assets		Во	ring Lo	9	Sheet: 3 of 8				
Date S	Started	: <u>06/16/2</u>	2019		Surface	Elevation:	N/A	Borii	na No .	MW-Rs		
Date C	Comple	ted: <u>06/17/</u> 2	2019		Northing	g (NAD83):	N/A	_		10100-113		
Drilling		Casca				(NAD83):	N/A	_ Client:	PG&E			
Drilling			-		Total D		143 ft bgs	_ Project:		W Remedy P		
Drill R			nic Truck Mou	unt		e Diameter:	10-12 inches	_ Location	: <u>PG&amp;E</u>	<u>Fopock, Need</u>	<u>lles, California</u>	
Driller							: 90.27 ft bgs	– Droiset N		DC000753.00	NE 1	
Drilling Logge			aya/ O. Flores ers / A. Mack			ng Method: ng Interval:	4 inch x 10 ft. Core Barrel Screen Intervals	_ Project i	number: ]	KC000/53.00	15 1	
Editor:			<u>/////////////////////////////////////</u>			ed to Well:		_				
					1							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid	
41 42	60										(0.0 - 133.0') No water used	
43								~				
44										9		
	60								<b>4 / !</b>			
45												
-												
46												
47												
- - -48_												
								•				
49												
50		No Sieve Samples	Ť		NR							
_		Collected					400					
51												
			· ·									
52	120											
53												
54												
55												
56												
57												
58												
	120											
59												
-												
60	viation	e: 11909 - 1	Initiad Soil (	    laccificat	ion Svet	m ft = feet	has = helow around surface	amel = ab	ovo mosi	n sea level. G	2\\\ -	

9/	<b>4RC</b>	ADIS	Design & Consultancy for natural and built assets		Boring Log			Sheet: 4 of 8				
l l	Started		2019			Elevation:	N/A	Bori	na No.:	MW-Rs		
	-	ted: <u>06/17/2</u>				g (NAD83):	N/A	_				
Drilling		Casca				(NAD83):	N/A	Client:	PG&E	W D   D		
Drilling			_		Total De	-	143 ft bgs	Project:		W Remedy Ph		
Drill R Driller			nic Truck Mou Ramos			e Diameter:	10-12 inches : 90.27 ft bgs	Location	1: <u>PG&amp;E</u>	Topock, Need	es, California	
l l	g Asst:		aya/ O. Flores		-	ng Method:	4 inch x 10 ft. Core Barrel	- Project l	Viimher:	RC000753 00	51	
Logge	-		ers / A. Mack			ng Interval:	Screen Intervals	_ 1 10,0001	Turribor.	1.0000700.00	01	
Editor			//cGrane			ed to Well:	Yes □ No	_				
	>			o 5								
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid	
616263646566656667	120									9	(0.0 - 133.0') No water used	
- 68 - 68 - 69 - 69 - 71 - 72 - 73 - 74 - 75 - 75 - 75 - 75 - 75 - 75 - 75	120	No Sieve Samples Collected			NR							
80	-											
Ahhra	viation	e 11909 - 1	Initiad Sail C	laccificatio	n Svete	om ft - foot	has = below around surface :	amel – ah	ove mea	n sea level C	١٨/ —	

9/-	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	3		She	et: 5 of	8
Date S	Started	06/16/	2019		Surface	Eleva	tion:	N/A	Borin	a No :	MW-Rs	
Date C	Comple	ted: <u>06/17/</u>	2019		Northing	g (NAD	83):	N/A	Воли	9 110	10177-173	
Drilling	g Co.:	<u>Casca</u>	de		Easting	(NAD8	33):	N/A	Client:	PG&E		
Drilling	g Meth	od: <u>Sonic</u>	Drilling		Total De	epth:		143 ft bgs	Project:	Final GV	N Remedy Ph	ase 1
Drill Ri	ig Type	e: <u>Proso</u> i	nic Truck Mou	unt	Borehol	e Dian	neter:	10-12 inches	Location:	PG&E T	opock, Needle	es, California
Driller	Name	<u>Eddie</u>	Ramos		Depth to	o First	Water:	: 90.27 ft bgs				
Drilling	g Asst:	L. Am	aya/ O. Flores	3	Samplin	ng Meth	nod:	4 inch x 10 ft. Core Barrel	Project N	umber: <u>F</u>	RC000753.005	51
Logge	r:	G. Jef	fers / A. Mack	<u> </u>	Samplin	ng Inter	val:	Screen Intervals				
Editor:	:	<u>Sean l</u>	<u>McGrane</u>		Convert	ed to \	Vell:					
_	ery.			ig io	(0, a)	(0, 0						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS		Soil Description			Drilling Notes	Drilling Fluid
81 82 83 84 85 86 87	120				NR						9	(0.0 - 133.0') No water used
	120	No Sieve Samples Collected	MW-R-VAS- 92-97 (45 ppb) 5/13/2019 11:44	Topock - Alluvium Deposits  Topock - Alluvium Deposits	SW-SM		and gracoarse pebbles trace m of gran (88.5 - brown (91'); so (93'); in (95.5 - brown (to suba	88.5") Topock - Alluvium Deposits; Well gwel (SW-SM); brown (7.5YR 4/3); very fir grained, angular to subround; and granuls; angular to subangular; little silt; trace coica; moist; cobble at bottom of formation, dodiorite and metadiorite 95.5") Topock - Alluvium Deposits; Silty granules to small cobbles, an ery fine to very coarse grained sand, ang; coarser clasts composed of metadiorite; ome silt; trace clay; decrease in granules ome silt; trace clay; decrease in granules or ease in granules of the silt; trace clay; decrease in granules or ease or eas	ne grained to ves to very large bobbles, subang coarser clasts gravel with san gular to subang moist to very large personant with grave personant with grave grained, are grained, are, angular to subang moist to very large personant with grave personant with grave grained, are grained, are, angular to	ery e pullar; consist d (GM); ngular; ular; ebbles	(91.0 - 91.0') Approximate depth to water	
97 98 99 100	60			Topock - Alluvium Deposits  Topock - Alluvium Deposits	SM SW-SM		to suba subang clasts c	ngular; and granules to very large pebble: ular; little silt; trace cobbles, angular to su composed of metadiorite; wet  100.5') Topock - Alluvium Deposits; Well ivel (SW-SM); brown (7.5YR 4/3); very fir grained, angular to subangular; and grant is, angular to subround; little silt; wet; large orite	s, angular to abangular; coa graded sand v ne grained to v ules to very la er clasts consis	with silt very ge st of		
Apprev	viation	s: USCS =	Unitied Soil C	,ıassıtıcatı	on Syste	∍m, ft =	reet,	bgs = below ground surface, a	amsi = abo	ve mear	ı sea level, G\	/v =

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 6 of	8
Date S	Started	: <u>06/16</u>	/2019		Surface	Eleva	ation: <u>N/A</u>	- Borin	na No ·	MW-Rs	
Date C	Comple	eted: <u>06/17</u>	/2019		Northing	g (NAE	D83): <u>N/A</u>		19 110	10100-113	
Drilling	g Co.:	Casca	ade		Easting	(NAD	83): <u>N/A</u>	Client:	PG&E		
Drilling	g Meth	od: <u>Sonic</u>	Drilling		Total D	epth:	143 ft bgs	Project:	Final G\	N Remedy Ph	ase 1
Drill Ri	ig Type	e: <u>Proso</u>	nic Truck Mo	unt	Borehol	e Dian	neter: 10-12 inches	Location	: <u>PG&amp;E T</u>	opock, Needl	es, California
Driller	Name	<u>Eddie</u>	Ramos		Depth to	First	Water: 90.27 ft bgs				
Drilling	Asst:	L. Am	aya/ O. Flore	S	Samplin	ng Metl	hod: 4 inch x 10 ft. Core Barrel	Project N	lumber: <u>F</u>	RC000753.00	51
Logge	r:	G. Jet	fers / A. Mac	K	Samplin	ig Inte	rval: <u>Screen Intervals</u>	_			
Editor:		<u>Sean</u>	McGrane		Conver	ed to \	Well: ⊠ Yes 🗌 No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
					SW-SM		4				(0.0 - 133.0') No
 _101_  _102_	60			Topock - Alluvium Deposits	SM		(100.5 - 102.0') Topock - Alluvium Deposits; (SM); brown (7.5YR 4/3); very fine grained to angular to subangular; some granules to very to subround; little silt; wet; larger clasts consis	very coarse gra	ined,	(102.0 - 108.0')	water used
103 104 										Heaving sands	
 106  107					NR			100			
108 109 110	108	No Sieve Samples		Topock - Alluvium Deposits	SM		(108.0 - 110.0") Topock - Alluvium Deposits; (SM); brown (7.5YR 5/3); very fine grained to angular to subangular; some granules to large subround; little silt; wet; 35,50,15,0	very coarse gra e pebbles, angula	ined, ar to	(440.0. 447.0)	
 _111_  _112_		Samples Collected	•	?	3		(110.0 - 117.0') (NR); Core not collected or lo boring log MW-Rd for lithology	ggea, no recove	ry, see	(110.0 - 117.0') Core not collected	
_113_  _114_					NR						
115											
 116 											
_117				L	<u>_</u>	<u> </u>	(117.0 - 119.0') (NR); Core not logged, no rec				
118	60		MW-R-VAS- 117-122 (5.8 ppb) 5/14/2019		NR		MW-Rd for lithology	covery, see borin	ig log		
_119		110.63	10:14	Topock - Alluvium Deposits	SM		(119.0 - 122.0') Topock - Alluvium Deposits; (SM); brown (7.5YR 4/3); very fine grained to angular to subangular; some granules to very	very coarse gra large pebbles, a	ined, angular		
ı∆hhr⊖\	viation	e・ 11809 =	Linitied Soil (	:Jacciticati	ion Sveta	⊶m ft =	= feet has = helow around surface	amel = ah	nve mear	n sea level GI	/// =

9/-	<b>ARC</b>	<b>ADIS</b>	Design & Consultancy for natural and built assets		Boring	Log		Sheet: 7 of	8
	tarted				Surface Eleva		Boring N	No.: MW-Rs	
	-	eted: <u>06/17/</u>			Northing (NAI	•	-		
	Co.:	<u>Casca</u>			Easting (NAD	•		i&E	
_	Meth				Total Depth:	143 ft bgs	•	<u>al GW Remedy Ph</u>	
	g Type					neter: 10-12 inches	_ Location: <u>PG</u>	&E Topock, Needl	<u>es, Californi</u>
	Name		Ramos		•	Water: <u>90.27 ft bgs</u>	_		
_	Asst:		-		Sampling Met		_ Project Numl	per: <u>RC000753.00</u>	51
ogge			<u>fers / A. Mac</u>		Sampling Inte		_		
ditor:		<u>Sean I</u>	<u>McGrane</u>		Converted to	Well: ⊠ Yes ☐ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Soil Description		Drilling Notes	Drilling Fluid
- 121_ - 122_	60		MW-R-VAS- 117-122 (5.8 ppb) 5/14/2019 10:14	Topock - Alluvium Deposits	SM	to subround; little silt; trace clay; coarser clasts metadiorite; wet (120') brown (7.5YR 4/3) with dusky red (10R 3 subangular to subround; mottled	•		(0.0 - 133.0') N water used
123_						(122.0 - 129.0') Topock - Alluvium Deposits; W silt and sand (GW-GM); dark brown (7.5YR 3/3 large pebbles, subangular to subround; and ver grained sand, angular to subround; little silt; coa	); granules to very y fine to very coarse		
- 124_						of metadiorite; wet		70	
125_				Topock - Alluvium	GW-GM	(125') dark brown (7.5YR 3/3) with dusky red (1 cobbles, angular to subangular; mottled	0R 3/3); trace		
126_ -				Deposits		.0			
127 <u> </u>	120			4					
128_									
129_						(129.0 - 132.0') Topock - Alluvium Deposits; Sil	ty gravel with good		
_					[0]	(GM); dark brown (7.5YR 3/3); granules to very	large pebbles,		
130_		No Sieve Samples			Pol de	subangular to subround; little very fine to very c subangular to subround; little silt; trace cobbles	oarse grained sand, , subangular to	•	
_		Collected		Topock - Alluvium	GM 0	subround; coarser clasts composed of metadion			
131_				Deposits	Para				
			•		1 19				
132									
					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(132.0 - 137.0') Topock - Alluvium Deposits; W silt and sand (GW-GM); dark brown (7.5YR 3/3		h	
133_						large pebbles, angular to subangular; some ver	y fine to very coarse	.	
						grained sand, angular to subangular; little silt; of composed of metadiorite; wet		(133.0 - 143.0') Water used to	
-  34_					201	(133') dark brown (7.5YR 3/3) with dusky red (1	0R 3/3); mottled	blow out fines	
34_				Topock -				before well install, volume of	
125				Alluvium Deposits	GW-GM			water used and recovered not	
135				'				documented	
, _ <del> </del>									
136	132								
37						(137.0 - 139.0') Topock - Alluvium Deposits; Sil	ty sand with gravel		
$\dashv$				Topock -		(SM); brown (7.5YR 4/3); very fine grained to very angular to subround; some granules to large pe	ery coarse grained,		
138_				Alluvium	SM	subround; little silt; coarser clasts composed of	metadiorite; wet;		
4				Deposits		metadiorite boulder fragments in 6" silt matrix at lens at 138 ft bgs	137.5 ft bgs, 1" cla	ay	
39_				<u> </u>	0.000	(139.0 - 143.0') Topock - Alluvium Deposits; W	oll graded acad		
4				Topock - Alluvium	SW-SM	silt and gravel (SW-SM); brown (7.5YR 4/3) wit	h dusky red (10R 3/	(3);	
				Deposits		very fine grained to very coarse grained, angula	r to subangular; sor	ne	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sheet: 8 of 8				
Date S	Started	: 06/16/2	2019		Surface	Elevat	tion: <u>N/A</u>	Borin	a No .	MW-Rs		
		ted: <u>06/17/2</u>			Northing		· ·			11177 113		
Drilling	g Co.:	<u>Cascac</u>	<u>le</u>		Easting	(NAD8		Client:	PG&E			
Drilling			-		Total D	-	143 ft bgs	-		N Remedy Ph		
Drill R			ic Truck Mou	<u>ınt</u>	Borehol			Location:	PG&E T	opock, Needle	es, California	
Driller					-		Water: <u>90.27 ft bgs</u>					
Drilling	-		ıya/ O. Flores		Samplin	_		Project N	umber: <u>F</u>	RC000753.005	51	
Logge			<u>ers / A. Mack</u>	<u> </u>	Samplin	•						
Editor:	:	<u>Sean N</u>	/IcGrane		Conver	ed to V	Vell: ⊠ Yes □ No					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid	
141 142	132	No Sieve Samples Collected		Topock - Alluvium Deposits	SW-SM		granules to very large pebbles, angular to subrou clasts composed of metadiorite; wet; mottled	und; little silt; o	coarser	(133.0 - 143.0') Water used to blow out fines before well install, volume of water used and recovered not documented		
143							End of Boring at 143.0 bgs					
144										4)		
145							$\langle \cdot \cdot \rangle$					
146												
147							19/1					
_148_												
_149_							3° 4					
_150_			·									
_151_			•		V							
152					Ç							
_153_					C							
154												
155												
156												
158												
159_												
160 Abbre	viation	s: USCS = I	Jnified Soil (	Classificati	ion Syste	em. ft =	feet, bgs = below ground surface, a	amsl = abo	ove mear	n sea level. G\	N =	

## Attachment C Soil Sampling Locations and Available Soil Analytical Results

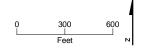
(Soil Data Presented in Excel File)



#### **LEGEND**

Soil Sample Collected from this Location in July 2019





#### **Baseline and Opportunistic Soil Sampling Locations**

Monthly Progress Report Groundwater Remedy Phase 1 Construction PG&E Topock Compressor Station, Needles, California



### Attachment D Perimeter Air Sampling Analytical Results



#### **Attachment D. Perimeter Air Sampling Analytical Results**

In conformance with the approved *Construction/Remedial Action Work Plan for the Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, California* (CH2M, 2015), air monitoring has been conducted during construction to evaluate the ongoing effectiveness of the dust control program, to guide modifications to field activities and engineering control measures, if necessary, and to document that construction activities do not result in the migration of soil contaminants beyond the work area boundaries.

Perimeter air monitoring has been performed if construction activities have the potential to generate visible dust. The air monitoring program consists of both real-time fugitive dust monitoring and perimeter air sampling for select soil contaminants. Locations to be monitored and sampled are as follows:

- Real-time fugitive dust monitoring is performed at the perimeter of the work areas (outside of the
  exclusion zone) that have the potential to generate visible dust, including the Construction
  Headquarters (CHQ) and the Soil Processing Yard (SPY).
- Perimeter air sampling for hexavalent chromium is performed at the perimeter of the work areas
  (outside of the exclusion zone) that are inside Areas of Concern (AOCs) within the construction
  footprint where hexavalent chromium concentrations in soil have been historically reported. Air
  sampling for hexavalent chromium in the SPY will be performed when soil from AOCs with reported
  concentrations of hexavalent chromium is actively being processed. Air sampling may also be
  performed at other work areas at the site based on hexavalent chromium concentrations reported
  from new soil data or based on field observations during construction activities.
- Air sampling for asbestos will be limited to work areas where Asbestos Containing Material (ACM) has been observed in prior field investigations, including two areas in AOC 12 and one area in AOC 4. Perimeter air monitoring may also be performed at other work areas at the site if ACM is discovered during construction activities.

Project-specific levels of concern (LOC) and action levels were developed as an indicator to determine whether additional dust control measures, as presented in the project's Dust Control Plan required by the Mojave Desert Air Quality Management District (MDAQMD), are necessary.

- The LOCs, which represent conservative concentrations of compounds that receptors outside the work area could be safely exposed to during construction, have been evaluated for all compounds that have been detected in soil samples collected at the site in the prior investigations. The LOCs were developed using standard U.S. Environmental Protection Agency (USEPA) and California Environmental Protection Agency risk assessment methodology, toxicology data, and exposure assumptions (USEPA, 2009, 2017; California Department of Toxic Substances Control [DTSC], 2018). Both cancer and noncancer health effects were considered. For each type of health effect, the LOC was back-calculated from an established target or from acceptable cancer risk or noncancer hazard where USEPA or DTSC toxicity values are available. The LOCs for cancer effects are based on a target excess cancer risk of one in a million (1 x 10-6). The LOCs for noncancer effects are based on a target hazard quotient of 1. The LOCs were developed using these assumptions:
  - Receptors are present outside the perimeter of the work areas
  - Exposure via inhalation is 10 hours per day for a 10 days on /4 days off schedule
  - Duration of Phase 1 of the final groundwater remedy construction is 20 months
- The action level for fugitive dust monitoring is 100 micrograms per cubic meter (μg/m³) for a net (downwind minus upwind) dust concentration. This action level is based on MDAQMD Rule 403, Part C. A 10-hour time-weighted average of readings collected throughout the work day will be used to document compliance with MDAQMD Rule 403.
- For analytes detected in soil, the following equation was used to calculate maximum allowable airborne particulate concentrations for receptor exposure outside the work area (based on the approach presented by Marlowe (1999):

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$$AL = \frac{LOC \times 1,000,000 \, mg/kg}{CS}$$

Where:

AL = action level for airborne particulates ( $\mu g/m^3$ )

LOC = Project specific risk-based level of concern (μg/m³)

CS = maximum detected concentration of compound in site soil (milligrams per kilogram [mg/kg])

#### Action levels were determined as follows:

- Soil data from prior investigations were gathered for the entire site.
- Sample locations within the maximum construction footprint were evaluated. Some sample locations were removed from evaluation as they were within the compressor station in locations where no construction activities will actually occur.
- The maximum reported soil concentration for each compound was determined and then used to calculate an airborne particulate action level.
- All compounds had allowable airborne particulate action levels greater than 100 μg/m³ except for hexavalent chromium at a few locations.
- Lead does not have USEPA or DTSC toxicity values; however, an action level was calculated using the DTSC (2011) LeadSpread 8 model. This is based on the maximum reported soil concentration for lead of 1,400 mg/kg from samples collected within the construction footprint and a blood level of concern through inhalation of 1 microgram per deciliter. The resulting action level for lead is 548 µg/m³.
- Therefore, keeping fugitive dust below the action level 100 μg/m³ will result in airborne particulate concentrations of contaminants (other than hexavalent chromium) remaining below their respective LOCs.
- Fugitive dust monitoring will be used to evaluate airborne contaminants in dust for all compounds except for hexavalent chromium.

In July 2019, 171 real time dust observation/monitoring events were conducted at the perimeter of the work areas (outside of the exclusion zone). There was one temporary exceedance of the action level for fugitive dust monitoring (100  $\mu$ g/m3) on July 1, 2019 due to construction vehicle movement in the floodplain. Contractor applied water to reduce fugitive dust.

No perimeter air sampling was conducted in July 2019. Table 1 presents analytical results from previous air sampling events.

#### **References Cited:**

California Department of Toxic Substances Control (DTSC). 2011. LeadSpread 8. https://www.dtsc.ca.gov/AssessingRisk/LeadSpread8.cfm.

California Department of Toxic Substances Control (DTSC). 2018. Human Health Risk Assessment Note 3 – DTSC-Modified Screening Levels (DTSC-SLs), California Department of Toxic Substances Control, Human and Ecological Risk Office (HERO). January.

CH2M HILL, Inc. (CH2M). 2015. Construction/Remedial Action Work Plan for the Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, California. November 18.

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Marlowe, C. 1999. Safety Now! Controlling Chemical Exposures at Hazardous Waste Sites with Real-Time Measurements. Fairfax, Va.: American Industrial Hygiene Association Press.

U.S. Environmental Protection Agency (USEPA). 2009. *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment)*. Final. OSWER 9285.7-82. January.

U.S. Environmental Protection Agency (USEPA). 2017. Regional Screening Levels (RSLs)—Generic Tables. November.

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#### **Table 1. Perimeter Air Sampling Results**

July 2019 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup PG&E Topock Compressor Station, Needles, California

Location ID	Location	Date	Sample Type	Hexavalent Chromium (ug/m <sup>3</sup> )
AOC13-D1	AOC13 Downwind 1	10/09/18	N	0.000732 J
AOC13-D2	AOC13 Downwind 2	10/09/18	N	0.000709 J
AOC13-U	AOC13 Upwind	10/09/18	N	ND (0.000172)
AOC30-IRZ-23-D1	AOC30-IRZ-23 Downwind 1	2/20/2019	N	ND (0.000859)
AOC30-IRZ-23-D2	AOC30-IRZ-23 Downwind 2	2/20/2019	N	ND (0.000862)
AOC30-IRZ-23-U1	AOC30-IRZ-23 Upwind	2/20/2019	N	0.000104 J
AOC4-D1	AOC4 Downwind 1	5/14/2019	N	ND (0.000148)
AOC4-D2	AOC4 Downwind 2	5/14/2019	N	ND (0.000155)
AOC4-U	AOC4 Upwind	5/14/2019	N	ND (0.000148)
AOC11-D1	AOC11 Downwind 1	5/15/2019	N	ND (0.0000392)
AOC11-D2	AOC11 Downwind 2	5/15/2019	N	0.0001262 J
AOC11-U	AOC11 Upwind	5/15/2019	N	ND (0.0000386)
AOC4-D1	AOC4 Downwind 1	5/16/2019	N	0.0000423 J
AOC4-D2	AOC4 Downwind 2	5/16/2019	N	ND (0.0000385)
AOC4-U	AOC4 Upwind	5/16/2019	N	ND (0.0000378)
AOC30-D1	AOC30 Downwind 1	6/17/2019	N	ND (0.0000633)
AOC30-D2	AOC30 Downwind 2	6/17/2019	N	ND (0.0000636)
AOC30-U1	AOC30 Upwind	6/17/2019	N	ND (0.000589)
AOC30-D1	AOC30 Downwind 1	6/18/2019	N	0.0000407 J
AOC30-D2	AOC30 Downwind 2	6/18/2019	N	ND (0.0000313)
AOC30-U1	AOC30 Upwind	6/18/2019	N	ND (0.000031)

#### Notes:

ug/m<sup>3</sup> micrograms per cubic meter

J concentration or reporting limit estimated by laboratory or data validation

N primary sample

ND not detected at the listed reporting limit

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## Attachment E Noise Monitoring Results (SEIR NOISE-2 Requirement)



#### **Attachment E. Noise Monitoring Results**

In conformance with the SEIR Mitigation Measure NOISE-2, noise monitoring has been conducted with ANSI S1.4 Type 1, precision sound level meters when construction activities are within the specified distance (e.g., 1,850 feet from sensitive receptors in California) at approved monitoring locations previously determined in coordination with the Tribes and land owners/managers (refer to Figures 1, 2 and 3). The goal of the noise monitoring is to identify if noise levels from project construction activities exceed applicable standards of the San Bernardino and Mohave County codes. Exceedance of standards would require coordination with the Tribes and land owners/managers to evaluate the potential constraints and locations for temporary engineered acoustical barriers. Consistent with the request of the Tribes, monitoring equipment is not left at the approved monitoring locations, rather it is mounted on a tripod for attended representative measurements and removed when the monitoring event is complete.

When a new construction activity is conducted or a previously monitored construction activity is conducted closer to a noise-sensitive area, monitoring is conducted at more frequent intervals to evaluate the potential need for an acoustical barrier. As the activities continue in the same location and multiple attended measurements indicate that the applicable standard has not been exceeded by the construction activity, periodic attending monitoring events are conducted to confirm continued compliance.

The attended monitoring events document the A-weighted  $L_{eq}$  sound level at periodic intervals (e.g., 5, 10, 15, 20, 30, 40, 50 and 60 minutes). The trend of the data at these intervals is evaluated in the field to assess the stability in the sound level to determine the duration of the monitoring event. When this interval data is relatively stable or clearly below the standard, the attended monitoring event will typically be 15 to 30 minutes in duration. As the applicable standards are in terms of the 24-hour average  $L_{dn}$  which is based on the  $L_{eq}$  metric, the measured  $L_{eq}$  is compared to the applicable  $L_{dn}$  standard for mobile noise sources (i.e., 60 A-weighted decibels [dBA] for Park Moabi, 65 dBA at all other locations). This results in a reasonable and conservative assessment given construction activities are not emitting noise continuously over a 24-hour period, nor are they occurring during the nighttime hours (10 p.m. to 7 a.m.).

In July 2019, 23 monitoring events have been conducted at the Park Moabi monitoring location (Figure 1). Construction activities closest to this monitoring location include activities at the SPY and CHQ, as well as construction traffic on NTH. The sound level typically varied between 39 and 56 dBA, with an average and median of just above 48 dBA.

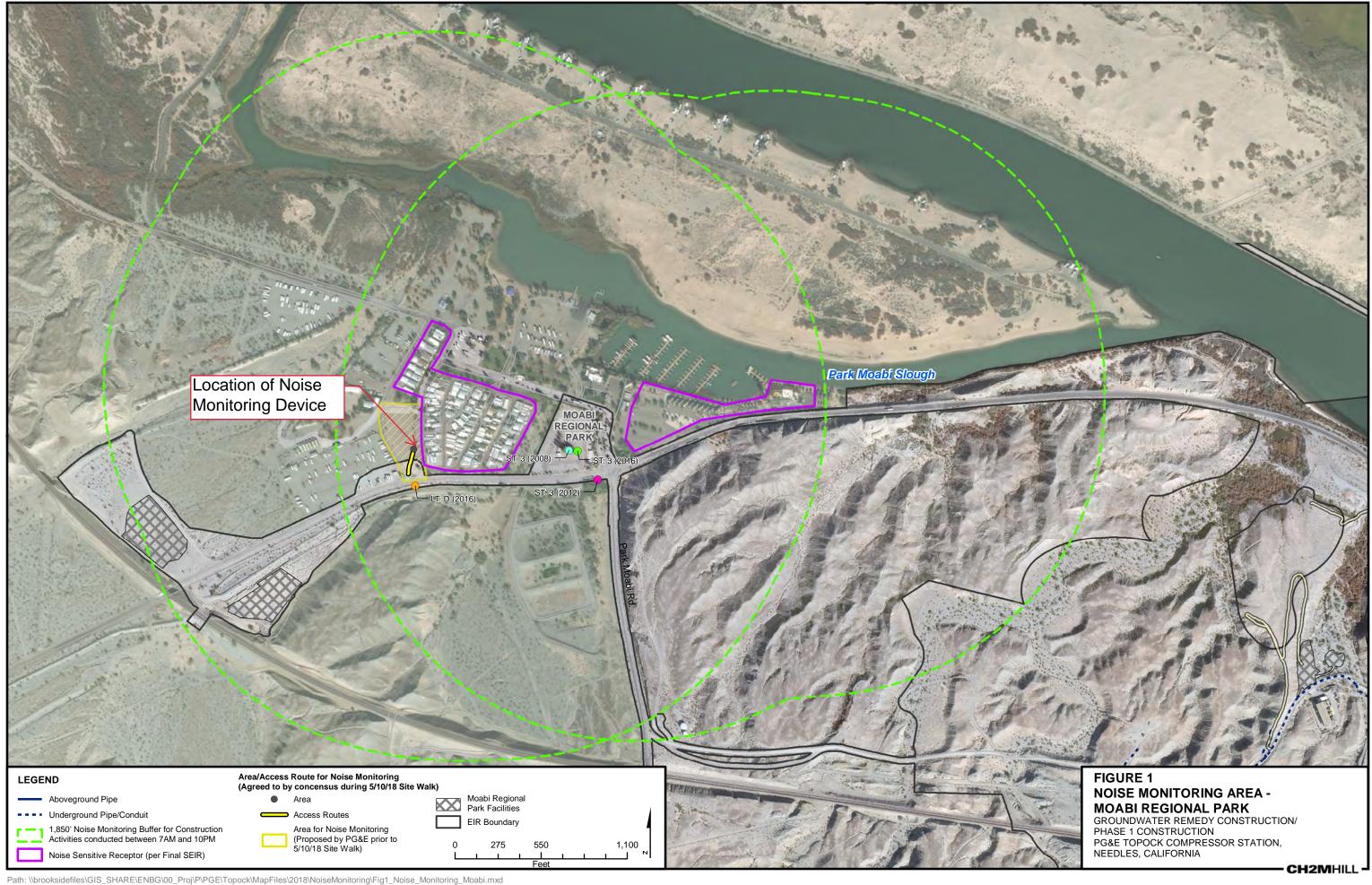
In July 2019, 23 monitoring events have been conducted at Maze B-Combined Area 1/2 (Figure 2). Construction activities closest to this monitoring location include activities at MW-20 Bench, and construction traffic on the access road. The sound levels varied between 46 and 63 dBA, with an average and median of 53 dBA.

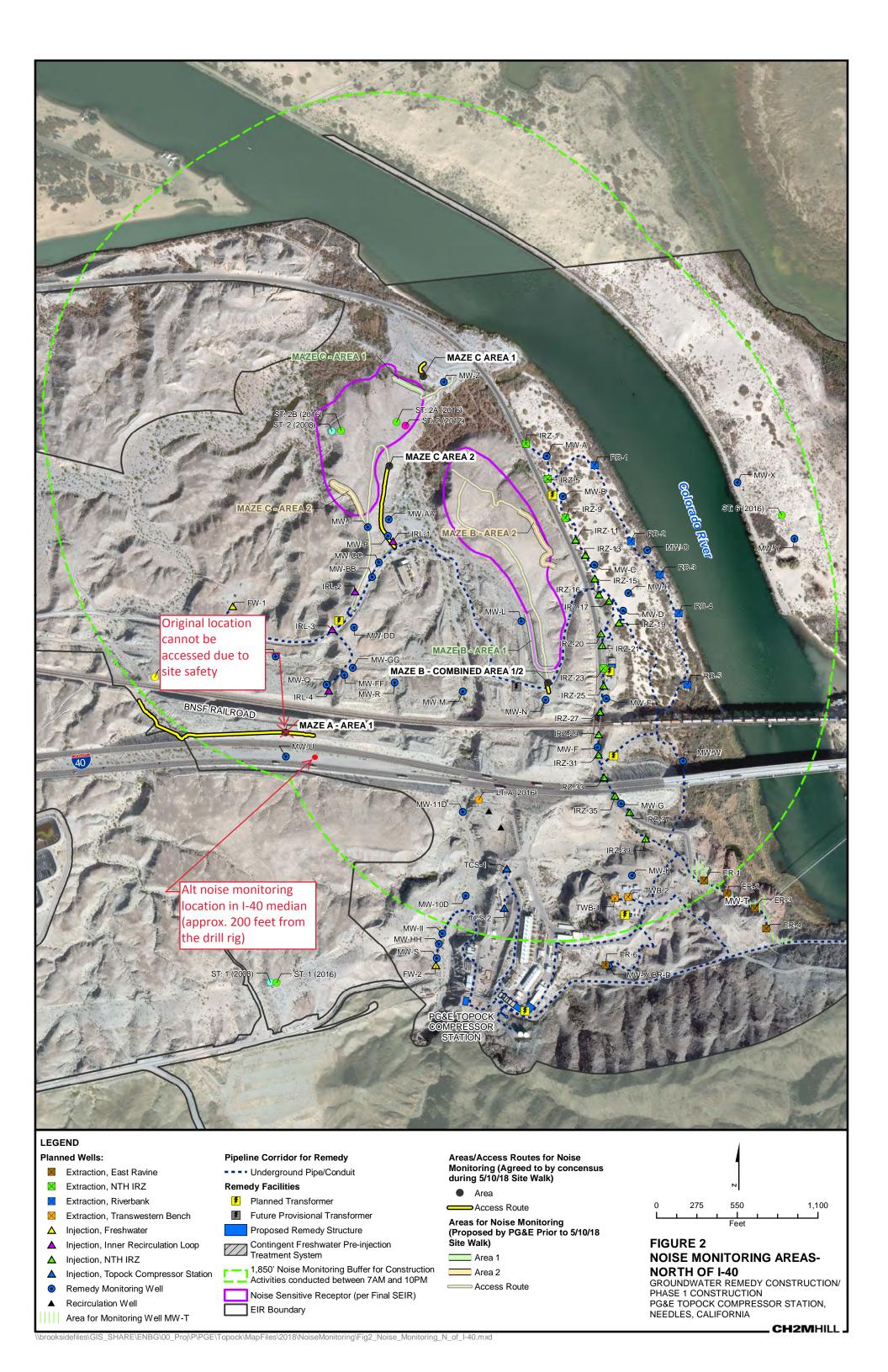
In July 2019, 23 monitoring events have been conducted at Maze C-Area 1 (Figure 2). Construction activities closest to this monitoring location include construction traffic on NTH, pipeline and access road construction activities in the northern end of the floodplain. The sound level typically varied between 42 and 60 dBA, with an average and median of 50-51 dBA.

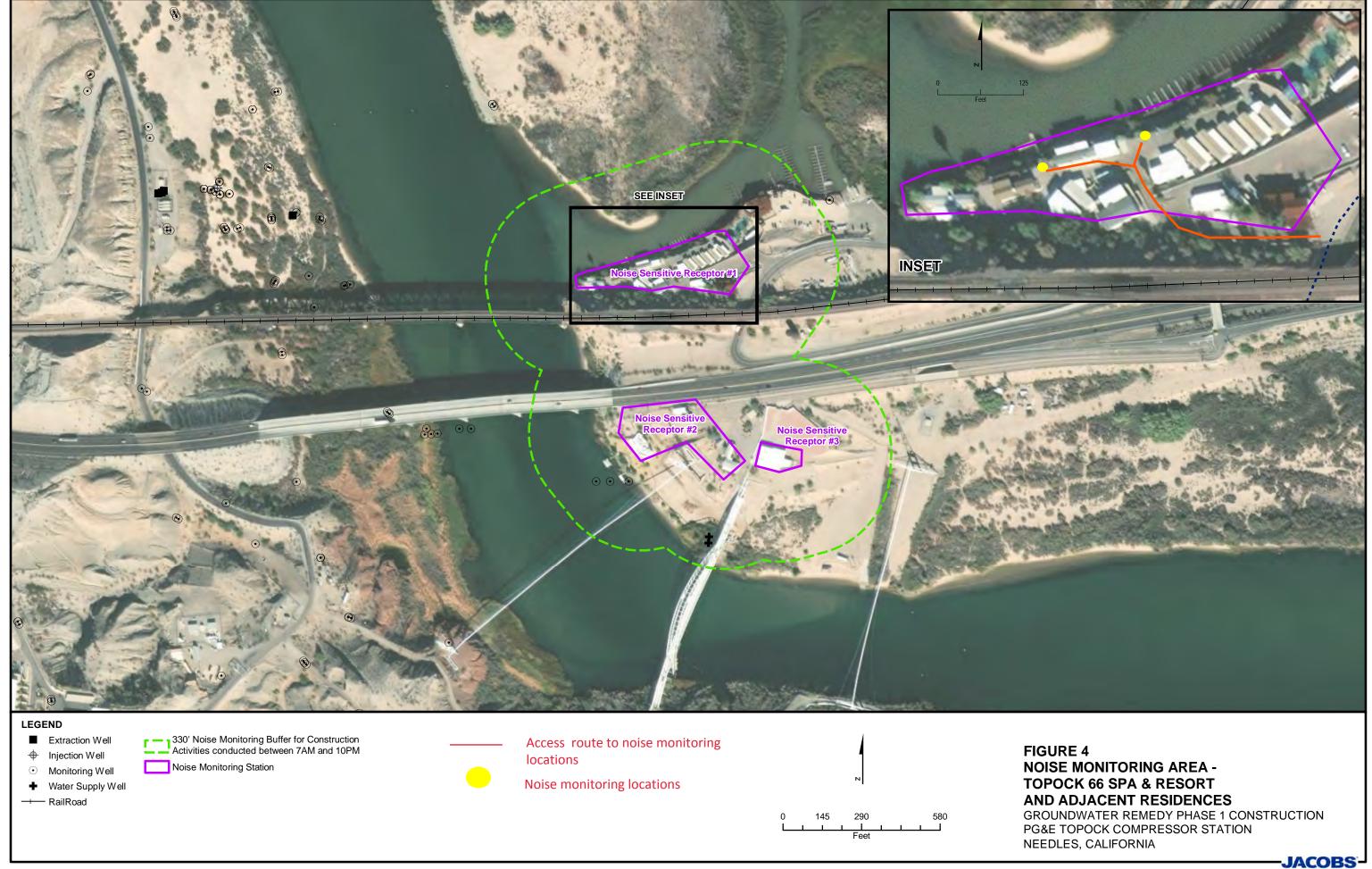
In July 2019, 13 monitoring events have been conducted at the mobile home park in Topock Marina (Figure 4). Construction activities closest to this monitoring location are associated with drilling at MW-X. The sound level typically varied between 49 and 66 dBA, with an average of 60 dBA and median of 61 dBA. Sound levels spiked when there are boat traffic, train traffic, and bird activities around the mobile homes.

Monitoring will continue as work progresses and moves into new areas to identify when an acoustical barrier needs to be considered.

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Attachment G Six-Week Look-Ahead Schedule (August 4 through September 14, 2019)

#### **Dishcarge Monitoring Record**



PGE Project / Property Name: Topock Final Remedy Project Number: ARC-18-T46

Affected System: Pipeline C5 STA 17+80 to C3 14+85

^	inceted System: Tipeline C5 517	17180 to C3 14183	
Discharge Date	C6 Discharge Location - Approximate QTY (gal)	C5 Discharge Location - Approximate QTY (gal)	Discharge Monitor Initials*
5/17/2019	6,300		ST
5/20/2019	1,800	5400	ST
5/21/2019	2,700		ST
5/22/2019	3,100	3,000	ST
5/23/2019		4,500	ST
5/24/2019		4,500	ST
5/28/2019		300	ST
6/4/2019		300	DZ
6/5/2019		800	DZ

<sup>\*</sup> By signing this record form, I acknowledge that all ground discharge has been observed and monitored for the following compliance requirements:

- a. No ponding of discharge water
- b.No attracting wildlife
- c.No channelizing of discharge water and runoff outside of work area
- d.No water discharged to washes or jurisdictional waters



# Attachment F Discharge Monitoring Record in compliance with Monitoring and Reporting Program for Order No. 2003-0003-DWQ (Table 2)

D-2 AX0206192356BAO

PG&E Topock Final Groundwater Remedy	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Primary Planned Activities	8/4/2019	8/5/2019	8/6/2019	8/7/2019	8/8/2019	8/9/2019	8/10/2019
Start Time (PST)	3, 1, 222	5,5,-5-5	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM
Pipeline C Installation			Site cleanup and equipment	Site cleanup and equipment	Site cleanup and equipment	Site cleanup and equipment	0.000
E5, F5			demobilization from floodplain	demobilization from floodplain	demobilization from floodplain	demobilization from floodplain	
TCS Approach Pipeline Installation	1			·		·	
F5, G5, G6			Pipeline installation @ B and J	Pipeline installation @ B and J	Pipeline installation @ B and J	Pipeline installation @ B and J	Pipeline installation @ B and J
13, 03, 00	No Work	No Work					
Well Installation			MW-C (E5), MW-B-267 site prep (E5),	MW-C (E5), MW-B-267 site prep (E5),	MW-C (E5), MW-X (E6), MW-H (E5), RB-	MW-C (E5), MW-X (E6), MW-H (E5), RB-	MW-B-267 (E5), MW-X (E6), MW-H (E5),
Well Histaliation			MW-X (E6), MW-H (E5), RB-4 (E5)	MW-X (E6), MW-H (E5), RB-4 (E5)	4 (E5)	4 (E5)	RB-4 (E5)
			107.04 (77)	(00.04 (00)	107.00 (77)	107.00 (57)	107.00 (57)
Well Development			IRZ-21 (E5)	IRZ-21 (E5)	IRZ-23 (E5)	IRZ-23 (E5)	IRZ-23 (E5)
Well Testing							
Primary Planned Activities	8/11/2019	8/12/2019	8/13/2019	8/14/2019	8/15/2019	8/16/2019	8/17/2019
Start Time (PST)	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	
TCS Approach Pipeline Installation		Pipeline installation @ B and J	Pipeline installation @ B and J	Pipeline installation @ B and J	Pipeline installation @ B and J	Pipeline installation @ B and J	
F5, G5, G6						. ,,	
	MW-R-267 (F5) MW-X (F6) MW-H (F5)	MW-B-267 (E5), MW-X (E6), MW-H (E5),	MW-R-267 (F5) MW-X (F6) MW-H (F5)	MW-B-267 (E5), MW-D site prep (E5),	MW-B-267 (E5), MW-D site prep (E5),		No Work
Well Installation	RB-4 (E5)	RB-4 (E5)	RB-4 (E5)	MW-X (E6), MW-H (E5), RB-4 (E5)	MW-X (E6), MW-H (E5), RB-4 (E5)	-	NO WOLK
	NB-4 (E3)	NB-4 (E3)	NB-4 (E3)	WW-X (E0), WW-11 (E3), KB-4 (E3)	10100-X (EO), 10100-11 (ES), KB-4 (ES)		
Well Development	IRZ-23 (E5)		=		MW-R-139 (F5)		]
Well Testing	-	IRZ-23 (E5)	IRZ-23 (E5)	IRZ-23 (E5)			]
Primary Planned Activities	8/18/2019	8/19/2019	8/20/2019	8/21/2019	8/22/2019	8/23/2019	8/24/2019
Start Time (PST)			6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM
Pipeline C Installation							
E5, F5			Tentative: Pipeline installation @ C6	Tentative: Pipeline installation @ C6	Tentative: Pipeline installation @ C6	Tentative: Pipeline installation @ C6	Tentative: Pipeline installation @ C6
TCS Approach Pipeline Installation							
F5, G5, G6			Pipeline installation @ B and J	Pipeline installation @ B and J	Pipeline installation @ B and J	Pipeline installation @ B and J	Pipeline installation @ B and J
F3, G3, G0	No Work	No Work					
			MW-B-267 (E5), MW-X (E6), MW-H (E5),	MW-B-267 (E5), MW-Y (E6), MW-H (E5),	MW-D (E5), MW-Y (E6), MW-H (E5), RB-	MW-D (E5), MW-Y (E6), MW-H (E5), IRZ-	MW-D (E5), MW-Y (E6), MW-H (E5), IRZ-
Well Installation			RB-4 (E5)	RB-4 (E5)	3 (E5)	19 site prep (E5), RB-3 (E5)	19 site prep (E5), RB-3 (E5)
				, -,			
Well Development			1	-	-	-	-
Well Testing			IRZ-21 (E5)	IRZ-21 (E5)	IRZ-21 (E5)	IRZ-21 (E5)	IRZ-21 (E5)
Primary Planned Activities							
illiary i familieu Activities	8/25/2019	8/26/2019	8/27/2019	8/28/2019	8/29/2019	8/30/2019	8/31/2019
Start Time (PST)	<b>8/25/2019</b> 6:30 AM	<b>8/26/2019</b> 6:30 AM	<b>8/27/2019</b> 6:30 AM	<b>8/28/2019</b> 6:30 AM	<b>8/29/2019</b> 6:30 AM	<b>8/30/2019</b> 6:30 AM	8/31/2019
	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	8/31/2019
Start Time (PST)							8/31/2019
Start Time (PST) Pipeline C Installation	6:30 AM 	6:30 AM  Tentative: Pipeline installation @ C6	6:30 AM  Tentative: Pipeline installation @ C6	6:30 AM  Tentative: Pipeline installation @ C6	6:30 AM  Tentative: Pipeline installation @ C6	6:30 AM  Tentative: Pipeline installation @ C6	8/31/2019
Start Time (PST) Pipeline C Installation E5, F5 TCS Approach Pipeline Installation	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	6:30 AM	
Start Time (PST) Pipeline C Installation E5, F5	6:30 AM  	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J	6:30 AM  Tentative: Pipeline installation @ C6	<b>8/31/2019</b> No Work
Start Time (PST) Pipeline C Installation E5, F5 TCS Approach Pipeline Installation F5, G5, G6	6:30 AM MW-D (ES), MW-Y (E6), MW-H (ES), IRZ-	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ-	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (ES), MW-Y (E6), IRZ-19 (E5), RB-	6:30 AM  Tentative: Pipeline installation @ C6	
Start Time (PST) Pipeline C Installation E5, F5 TCS Approach Pipeline Installation	6:30 AM  	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J	6:30 AM  Tentative: Pipeline Installation @ C6  Pipeline installation @ B and J	
Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6 Well Installation	6:30 AM MW-D (ES), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (ES), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J	
Start Time (PST) Pipeline C Installation ES, F5 TCS Approach Pipeline Installation F5, G5, G6 Well Installation Well Development	6:30 AM MW-D (ES), MW-Y (E6), MW-H (ES), IRZ-	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ-	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (ES), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J	
Start Time (PST)  Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6  Well Installation  Well Development Well Testing	6:30 AM MW-D (ES), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J	No Work
Start Time (PST)  Pipeline C Installation ES, F5 TCS Approach Pipeline Installation F5, G5, G6  Well Installation  Well Development Well Testing Primary Planned Activities	6:30 AM MW-D (ES), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (ES)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (ES), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  9/6/2019	No Work 9/7/2019
Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST)	6:30 AM MW-D (ES), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J	No Work
Start Time (PST)  Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6  Well Installation  Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation	6:30 AM MW-D (ES), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (ES)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)   9/5/2019  6:30 AM	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  9/6/2019 6:30 AM	No Work 9/7/2019 6:30 AM
Start Time (PST) Pipeline C Installation E5, F5 TCS Approach Pipeline Installation F5, G5, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation E5, F5	6:30 AM MW-D (ES), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (ES)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (ES), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  9/6/2019	No Work 9/7/2019
Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation	6:30 AM  MW-D (ES), MW-Y (E6), MW-H (ES), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (ES) 9/1/2019	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)  9/2/2019	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)   9/3/2019	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)  MW-C (E5)   9/4/2019  6:30 AM  Tentative: Pipeline installation @ C6	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)  MW-C (E5)   9/5/2019  6:30 AM  Tentative: Pipeline installation @ C6	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J    9/6/2019  6:30 AM  Tentative: Pipeline installation @ C6	No Work  9/7/2019 6:30 AM  Tentative: Pipeline installation @ C6
Start Time (PST) Pipeline C Installation E5, F5 TCS Approach Pipeline Installation F5, G5, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation E5, F5	6:30 AM MW-D (ES), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)  9/2/2019  No Work	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)  MW-C (E5)   9/4/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J	No Work  9/7/2019 6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J
Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6	6:30 AM  MW-D (ES), MW-Y (E6), MW-H (ES), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (ES) 9/1/2019	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)  9/2/2019	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)   9/3/2019	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (ES), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (ES)   9/4/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), RB-19 (E5), R	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)   9/5/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-1	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J    9/6/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-	9/7/2019 6:30 AM Tentative: Pipeline installation @ C6 Pipeline installation @ B and J MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-
Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6 Well Installation	6:30 AM  MW-D (ES), MW-Y (E6), MW-H (ES), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (ES) 9/1/2019	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)  9/2/2019  No Work	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)   9/3/2019	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J    9/6/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (ES), MW-Y (E6), IRZ-19 (ES), RB-3 (ES)	9/7/2019 6:30 AM  Tentative: Pipeline installation @ C6 Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)
Start Time (PST)  Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6  Well Installation  Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6  Well Installation Well Development	6:30 AM  MW-D (ES), MW-Y (E6), MW-H (ES), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (ES) 9/1/2019	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)  9/2/2019  No Work	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)   9/3/2019	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (ES), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (ES)   9/4/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), RB-19 (E5), R	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)   9/5/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-1	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J    9/6/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-	9/7/2019 6:30 AM Tentative: Pipeline installation @ C6 Pipeline installation @ B and J MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-
Start Time (PST) Pipeline C Installation ES, F5 TCS Approach Pipeline Installation F5, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, F5 TCS Approach Pipeline Installation F5, G5, G6 Well Installation Well Development Well Testing	6:30 AM MW-D (ES), MW-Y (E6), MW-H (ES), IRZ- 19 site prep (ES), RB-3 (ES)  MW-C (ES) 9/1/2019  No Work	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (ES), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  9/6/2019 6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-B (E5)	9/7/2019 6:30 AM Tentative: Pipeline installation @ C6 Pipeline installation @ B and J MW-D (ES), MW-Y (E6), IRZ-19 (E5), RB-3 (E5) RB-5 (E5)
Start Time (PST)  Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6  Well Installation  Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6  Well Installation Well Development	6:30 AM  MW-D (ES), MW-Y (E6), MW-H (ES), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (ES) 9/1/2019	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)  9/2/2019  No Work	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)   9/3/2019	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J    9/6/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (ES), MW-Y (E6), IRZ-19 (ES), RB-3 (ES)	9/7/2019 6:30 AM  Tentative: Pipeline installation @ C6 Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)
Start Time (PST) Pipeline C Installation ES, F5 TCS Approach Pipeline Installation F5, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, F5 TCS Approach Pipeline Installation F5, G5, G6 Well Installation Well Development Well Testing	6:30 AM MW-D (ES), MW-Y (E6), MW-H (ES), IRZ- 19 site prep (ES), RB-3 (ES)  MW-C (ES) 9/1/2019  No Work	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (ES), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  9/6/2019 6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-B (E5)	9/7/2019 6:30 AM Tentative: Pipeline installation @ C6 Pipeline installation @ B and J MW-D (ES), MW-Y (E6), IRZ-19 (E5), RB-3 (E5) RB-5 (E5)
Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6  Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6 Well Installation Well Development Well Testing Primary Planned Activities	6:30 AM  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), R8-3 (E5)  MW-C (E5)  9/1/2019  No Work  9/8/2019 6:30 AM	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)  NW-C (E5)  No Work Labor Day  9/9/2019  6:30 AM	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)  NW-C (E5)  No Work  9/10/2019  6:30 AM	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J    9/6/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-B (E5)   9/13/2019  6:30 AM	9/7/2019 6:30 AM Tentative: Pipeline installation @ C6 Pipeline installation @ B and J MW-D (ES), MW-Y (E6), IRZ-19 (E5), RB-3 (E5) RB-5 (E5)
Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, G5, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST)	6:30 AM MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), R8-3 (E5)  MW-C (E5) 9/1/2019  No Work	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  9/6/2019 6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-B (E5) 9/13/2019	9/7/2019 6:30 AM Tentative: Pipeline installation @ C6 Pipeline installation @ B and J MW-D (ES), MW-Y (E6), IRZ-19 (E5), RB-3 (E5) RB-5 (E5)
Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS	6:30 AM MW-D (ES), MW-Y (E6), MW-H (ES), IRZ- 19 site prep (ES), R8-3 (ES) MW-C (ES) 9/1/2019  No Work  9/8/2019 6:30 AM	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), R8-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (ES), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)   9/5/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (ES), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-B (E5)   9/12/2019  6:30 AM  Tentative: Pipeline installation @ C6	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J    9/6/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-B (E5)   9/13/2019  6:30 AM  Tentative: Pipeline installation @ C6	9/7/2019 6:30 AM Tentative: Pipeline installation @ C6 Pipeline installation @ B and J MW-D (ES), MW-Y (E6), IRZ-19 (E5), RB-3 (E5) RB-5 (E5)
Start Time (PST)  Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6  Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6 Well Installation Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation Use Installation FS, GS, G6 FS GS, GS GS FS GS, GS GS FS GS, FS	6:30 AM  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), R8-3 (E5)  MW-C (E5)  9/1/2019  No Work  9/8/2019 6:30 AM	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)  NW-C (E5)  No Work Labor Day  9/9/2019  6:30 AM	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)  NW-C (E5)  No Work  9/10/2019  6:30 AM	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J    9/6/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-B (E5)   9/13/2019  6:30 AM	9/7/2019 6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  RB-5 (E5) 9/14/2019
Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6	6:30 AM    MW-D (ES), MW-Y (E6), MW-H (ES), IRZ- 19 site prep (ES), RB-3 (ES)  MW-C (ES)   9/1/2019  No Work  9/8/2019  6:30 AM	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J   9/6/2019 6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)   9/13/2019 6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ C6	9/7/2019 6:30 AM Tentative: Pipeline installation @ C6 Pipeline installation @ B and J MW-D (ES), MW-Y (E6), IRZ-19 (E5), RB-3 (E5) RB-5 (E5)
Start Time (PST)  Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6  Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6 Well Installation Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation Use Installation FS, GS, G6 FS GS, GS GS FS GS, GS GS FS GS, FS	6:30 AM    MW-D (ES), MW-Y (E6), MW-H (ES), IRZ- 19 site prep (ES), RB-3 (ES)  MW-C (ES)   9/1/2019  No Work  9/8/2019  6:30 AM    MW-D (ES), MW-Y (E6), MW-S (GS), RB-	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)  9/2/2019  No Work Labor Day  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-S (G5), RB-	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)  9/3/2019  No Work  9/10/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-S (G5), RB-	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)  MW-C (E5)  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-B (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J    9/6/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-B (E5)   9/13/2019  6:30 AM  Tentative: Pipeline installation @ C6	9/7/2019 6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  RB-5 (E5) 9/14/2019
Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6 Well Installation	6:30 AM	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)  9/2/2019  No Work Labor Day  9/9/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-S (G5), RB- 3 (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)   9/4/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-B (E5)   9/11/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-S (G5), RB-2 (E5), MW-Y (E6), MW-Y (E6), MW-S (G5), RB-2 (E5), MW-S (E5), MW-S (E5), RB-2 (E5	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J   9/6/2019 6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)   9/13/2019 6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ C6	9/7/2019 6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  RB-5 (E5) 9/14/2019
Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6 Well Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation Well Development Well Testing Primary Planned Activities Start Time (PST) Pipeline C Installation ES, FS TCS Approach Pipeline Installation FS, GS, G6	6:30 AM    MW-D (ES), MW-Y (E6), MW-H (ES), IRZ- 19 site prep (ES), RB-3 (ES)  MW-C (ES)   9/1/2019  No Work  9/8/2019  6:30 AM    MW-D (ES), MW-Y (E6), MW-S (GS), RB-	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-H (E5), IRZ- 19 site prep (E5), RB-3 (E5)  MW-C (E5)  9/2/2019  No Work Labor Day  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-S (G5), RB-	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)  9/3/2019  No Work  9/10/2019  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), MW-S (G5), RB-	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-C (E5)  MW-C (E5)  6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-B (E5)	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  ———————————————————————————————————	6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J   9/6/2019 6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  MW-B (E5)  9/13/2019 6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J	9/7/2019 6:30 AM  Tentative: Pipeline installation @ C6  Pipeline installation @ B and J  MW-D (E5), MW-Y (E6), IRZ-19 (E5), RB-3 (E5)  RB-5 (E5) 9/14/2019

The timing of field activities are estimated and may change day-to-day based on site conditions, field progress, or other factors.

When planning to visit the site to observe a specific activity or area, please contact Curt Russell (760-791-5884) for the latest schedule information.

"GS" - Intrusive work location as described on the project grid map. See Project Grid Map tab for location of grid positions provided on the lookahead

## Attachment H Available Groundwater Monitoring Data (DTSC Condition of Approval xi)



#### **Attachment H. Available Groundwater Monitoring Data**

Pursuant to Condition of Approval # xi in DTSC's approval letter dated August 24, 2018 (DTSC, 2018a), PG&E is required to report data from samples collected as part of the sitewide groundwater monitoring program within 60 days of sample collection. In compliance with this requirement, PG&E initially submitted validated data to DTSC via monthly emails. For ease of recordkeeping and to minimize the number of adhoc compliance reports/emails, PG&E has since included validated data in each monthly progress report starting with the November 2018 report.

AX0206192356BAO H-1

MW-57-185

MW-58BR

MW-59-100

MW-59-100

MW-60-125

MW-60BR-245

MW-60BR-245 D

MW-60BR-245 S

MW-909-Q219

MW-58BR-Q219

MW-910-Q219

MW-59-100-Q219

MW-60-125-Q219

MW-60BR-245-3V-Q219

MW-60BR-245-LF\_D-Q219

MW-60BR-245-LF\_S-Q219

FD

N

FD

N

Ν

N

MW-57-185-LF S-Q219

MW-59-100-Q219

GW

GW

GW

GW

GW

GW

GW

GW

5/20/2019

5/21/2019

5/20/2019

5/20/2019

5/22/2019

5/22/2019

5/23/2019

5/23/2019

3.4

1.9

2.2

1.6

8.8

9.2

8.7

4.7

12

2,000

2,200

880

130

68

85

5.1

14

2,200

2,300

890

120

61

4.8 J

270

ND (0.5)

2.9

4.3

7.9

6.7

6.7

83

26

9.4

9

17

60

63

0.1

0.68

1.7

1.7

3.7

0.3

0.22

ND (2.5)

1.9

1.8

1.9

6.2

2.7

3.2

18,000

8,200

14,000

14,000

8,700

16,000

17,000

17,000

A	PARCADIS  Design & Consultancy for natural and built assets  Description  Mothod						ASSET Chromium, Hexavalent	ASSET Chromium, total dissolved	ASSET Manganese, dissolved	ASSET Molybdenum, dissolved	ASSET Nitrate/Nitrite as Nitrogen	ASSET Selenium, dissolved	ASSET Specific conductance	EMXT Arsenic, dissolved	EMXT Chromium, Hexavalent	EMXT Chromium, total dissolved	EMXT Manganese, dissolved	EMXT Specific conductance
GMP 2019-05 Sa	ampling				Method	SW 6020	EPA 218.6	SW 6020	SW 6020	SW 6020	SM 4500-NO3 F	SW 6020	EPA 120.1	SW 6020A	EPA 218.6	SW 6020A	SW 6020A	EPA 120.1
	· ·				Unit	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	uS/cm	ug/L	ug/L	ug/L	ug/L	uS/cm
		Sample			Date													
Location ID	Sample ID	Туре	Parent Sample ID	Matrix	Sampled													
MW-61-110	MW-61-110-Q219	N		GW	5/23/2019	3.7	280	280	210	23	0.54	0.87	16,000					
MW-62-065	MW-62-065-Q219	N		GW	5/21/2019	1.6	570	560	0.89	13	4.8	4.3	6,200					
MW-62-110	MW-62-110-Q219	N		GW	5/22/2019	3	ND (1.0)	ND (1.0)	150	68	ND (0.05)	ND (0.5)	12,000					
MW-62-190	MW-62-190-Q219	N		GW	5/22/2019	1.3	ND (1.0)	ND (1.0)	780	46	ND (0.05)	ND (0.5)	18,000					
MW-63-065	MW-63-065-Q219	N		GW	5/21/2019	1.5	1.3	2.8	2.5	19	0.93	1	6,700					
MW-64BR	MW-64BR-Q219	N		GW	5/21/2019	4	ND (1.0)	ND (1.0)	960	65	ND (0.05)	ND (0.5)	13,000					
MW-65-160	MW-65-160-Q219	N		GW	5/16/2019	0.69	160	190	76	110	14	9.4	4,000					
MW-65-225	MW-65-225-Q219	N		GW	5/16/2019	2.5	180	160	40	44	2.6	2.3	15,000					
MW-66-165	MW-66-165-Q219	N		GW	5/16/2019	1.2	550	570	ND (0.5)	5.5	25	28	3,900					
MW-66-165	MW-911-Q219	FD	MW-66-165-Q219	GW	5/16/2019	1.2	540	580	ND (0.5)	5.5	25	28	4,000					
MW-66-230	MW-66-230-Q219	N		GW	5/16/2019	9.8	6,400	7,000	3.6	71	11	9	19,000					
MW-66BR-270	MW-66BR-270-Q219	N		GW	5/22/2019	ND (0.1)	ND (1.0)	ND (1.0)	66	10	1.7	ND (0.5)	2,300					
MW-67-185	MW-67-185-Q219	N		GW	5/16/2019	1	2,100	2,200	ND (0.5)	5.7	79	400	7,700					
MW-67-225	MW-67-225-Q219	N		GW	5/16/2019	3.4	3,100	3,300	2.9	48	26	93	7,000					
MW-67-260	MW-67-260-Q219	N		GW	5/16/2019	8.9	800	850	130	69	0.55	ND (2.5)	18,000					
MW-68-180	MW-68-180-Q219	N		GW	5/22/2019	3.1	5,400	6,200	ND (0.5)	36	9.4	11	3,500					
MW-68-240	MW-68-240-Q219	N		GW	5/23/2019	1.6	2,000	2,000	29	30	4.3	4.8	16,000					
MW-68-240	MW-912-Q219	FD	MW-68-240-Q219	GW	5/23/2019	1.7	1,900	2,100	29	31	4.3	4.7	16,000					
MW-68BR-280	MW-68BR-280-Q219	N		GW	5/22/2019	1.2	ND (1.0)	ND (1.0)	150	40	ND (0.05)	ND (2.5)	20,000					
MW-69-195	MW-69-195-Q219	N		GW	5/16/2019	2.2	120	120	0.54	58	10	8	2,600					
MW-70-105	MW-70-105-Q219	N		GW	5/21/2019	3.7	170	170	6	66	4.9	4.6	3,500					
MW-70BR-225	MW-70BR-225-LF-Q219	N		GW	5/21/2019	2	1,600	1,700	1.1	20	3.5	2.8	13,000					
MW-71-035	MW-71-035-Q219	N		GW	5/23/2019	1.2	ND (1.0)	ND (1.0)	18 J	13 J	0.085	0.52	14,000					
MW-72-080	MW-72-080-Q219	N		GW	5/24/2019	10	55	51	77	85	0.37	ND (2.5)	13,000					
MW-72BR-200 S	MW-72BR-200-LF S-Q219	N		GW	5/23/2019	13	ND (1.0)	ND (1.0)	210	76	ND (0.05)	ND (0.5)	15,000					1
MW-73-080	MW-73-080-Q219	N		GW	5/23/2019	1.8	34	35	5.7	30	3.3	4.3	12,000					<b>†</b>
MW-74-240	MW-74-240-Q219	N		GW	5/22/2019	8.3	0.55	ND (1.0)	4.5	19	2.1	2.4	800					1
TW-01	TW-01-Q219	N		GW	5/24/2019		2,300	2,400	1	15	15	14	7,000					†
TW-04	TW-04-LF-Q219	N		GW	5/16/2019		5.1	4.5	16	42		ND (2.5)	20,000					
TW-05	TW-05-LF-Q219	N		GW	5/20/2019		11	9.9	3.1	31		0.59	12,000					
TW-05	MW-913-O219	FD	TW-05-LF-0219	GW	5/20/2019		11	9.6	3	30		0.52	12,000					<del></del>

94	RCAL	DIS	Design & Consulta for natural and built assets	ancy Lab  Description	ASSET Alkalinity, total as CaCO3	ASSET Chloride	ASSET Chromium, Hexavalent	ASSET Chromium, total dissolved	ASSET Manganese, dissolved	ASSET Nitrate/Nitrite as Nitrogen	ASSET pH	ASSET Specific conductance	ASSET Sulfate	ASSET Total dissolved solids	BCLabs Calcium, dissolved	BCLabs Iron, dissolved	BCLabs Magnesium, dissolved	BCLabs Sodium, dissolved
PMP 2019-06 S	Sampling			Method	SM 2320 B	EPA 300.0	EPA 218.6	EPA 200.8	EPA 200.8	SM 4500-NO3 F	SM 4500-H+ B	EPA 120.1	EPA 300.0	SM 2540 C	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7
			J	Units	mg/L	mg/L	ug/L	ug/L	ug/L	mg/L	PHUNITS	uS/cm	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L
Location ID	Sample ID	Sample Type	Matrix	Date Sampled														
PE-01	PE-01-0619	N	GW	6/5/2019	200	390	ND (0.2)	ND (1.0)	460	ND (0.05)	7.6	2,000	240	1,200	130	430	36	340
TW-03D	TW-03D-0619	N	GW	6/5/2019	160	2,100	450	440	18	2.6	7.3	7,500	480	4,200	200	ND (100)	31	1,300

		10	Design & Consultance	v	Lab	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET
	ARCAI	115	Design & Consultancy for natural and built assets	*	Description	Arsenic,	Barium,	Chromium,	Chromium, total			Manganese,	Molybdenum,	Nitrate/Nitrite as		Selenium,	Specific	Total Suspended
, ,			built assets		Description	dissolved	dissolved	Hexavalent	dissolved	Iron	Iron, dissolved	dissolved	dissolved	Nitrogen	Ha	dissolved	conductance	Solids (TSS)
RMP 2019-05	SURFACEWAT Sampli	าต	]		Method	SW 6020	SW 6020	EPA 218.6	SW 6020	SW 6010B	SW 6010B	SW 6020	SW 6020	SM 4500-NO3 F	SM 4500-H+ B	SW 6020	EPA 120.1	SM 2540 D
Ki ii 2015 05	JOHN ACEWAN Jumpin	19			Unit	ua/L	ua/L	ua/L	ug/L	ua/L	ug/L	ua/L	ug/L	mg/L	PHUNITS	ua/L	uS/cm	mg/L
		Sample	Parent Sample		Date	- 31 –		3/-		- 3/ -	- 51 -		**5/ =				3.57 5	
Location ID	Sample ID	Type	ID	Matrix	Sampled													
C-BNS	C-BNS-Q219	N		GW	6/18/2019	2.2	110	ND (0,2)	ND (1.0)	22	ND (20)	ND (0.5)	4.2	0.4	8.1	1.5	880	ND (5.0)
C-CON-D	C-CON-D-0219	N		GW	6/19/2019	2.3	100	ND (0,2)	ND (1.0)	45	ND (20)	ND (0.5)	4.2	0.38	8.2	1.6	920	ND (5.0)
C-CON-S	C-CON-S-Q219	N		GW	6/19/2019	2.2	100	ND (0.2)	ND (1.0)	36	ND (20)	ND (0.5)	4.2	0.37	8.2	1.4	910	ND (5.0)
C-I-3-D	C-I-3-D-Q219	N		GW	6/18/2019	2.3	110	ND (0.2)	ND (1.0)	150 J	ND (20)	ND (0.5)	4.4	0.36	8.2	1.6	880	ND (5.0)
C-I-3-D	MW-916-Q219	FD	C-I-3-D-Q219	GW	6/18/2019	2.2	110	ND (0.2)	ND (1.0)	25 J	ND (20)	ND (0.5)	4.3	0.37	8.2	1.4	890	ND (5.0)
C-I-3-S	C-I-3-S-Q219	N	·	GW	6/18/2019	2.2	110	ND (0.2)	ND (1.0)	41	ND (20)	ND (0.5)	4.2	0.37	8.1	1.5	900	ND (5.0)
C-MAR-D	C-MAR-D-Q219	N		GW	6/19/2019	2.3	110	ND (0.2)	ND (1.0)	200	44	ND (0.5)	4.2	0.36	8.2	1.8	910	7
C-MAR-S	C-MAR-S-Q219	N		GW	6/19/2019	2.3	110	ND (0.2)	ND (1.0)	190	ND (20)	0.66	4.3	0.38	8.2	1.6	900	9.5
C-NR1-D	C-NR1-D-Q219	N		GW	6/19/2019	2.3	100	ND (0.2)	ND (1.0)	49	ND (20)	ND (0.5)	4.1	0.37	8.2	1.7	910	ND (5.0)
C-NR1-S	C-NR1-S-Q219	N		GW	6/19/2019	2.2	100	ND (0.2)	ND (1.0)	46	ND (20)	ND (0.5)	4.1	0.42	8.2	1.6	910	ND (5.0)
C-NR3-D	C-NR3-D-Q219	N		GW	6/19/2019	2.1	110	ND (0.2)	ND (1.0)	39	ND (20)	ND (0.5)	4.2	0.38	8.2	1.5	910	ND (5.0)
C-NR3-S	C-NR3-S-Q219	N		GW	6/19/2019	2.2	110	ND (0.2)	ND (1.0)	32	ND (20)	ND (0.5)	4.2	0.35	8.1	1.4	920	ND (5.0)
C-NR3-S	MW-917-Q219	FD	C-NR3-S-Q219	GW	6/19/2019	2.2	100	ND (0.2)	ND (1.0)	26	ND (20)	ND (0.5)	4.1	0.36	8.1	1.6	920	ND (5.0)
C-NR4-D	C-NR4-D-Q219	N		GW	6/19/2019	2.2	100	ND (0.2)	ND (1.0)	ND (20)	ND (20)	ND (0.5)	4.1	0.36	8.2	1.4	930	ND (5.0)
C-NR4-S	C-NR4-S-Q219	N		GW	6/19/2019	2.3	100	ND (0.2)	ND (1.0)	31	ND (20)	ND (0.5)	4.3	0.36	8.2	1.7	930	ND (5.0)
C-R22A-D	C-R22A-D-Q219	N		GW	6/18/2019	2.2	110 J	ND (0.2)	ND (1.0)	85 J	ND (20)	ND (0.5)	4.1	0.38	8.2	1.6	890	ND (5.0)
C-R22A-S	C-R22A-S-Q219	N		GW	6/18/2019	2.2	110	ND (0.2)	ND (1.0)	33	ND (20)	ND (0.5)	4.3	0.39	8.2	1.5	890	ND (5.0)
C-R27-D	C-R27-D-Q219	N		GW	6/18/2019	2.1	110	ND (0.2)	ND (1.0)	38	ND (20)	ND (0.5)	4.2	0.39	8.1	1.7	880	ND (5.0)
C-R27-S	C-R27-S-Q219	N		GW	6/18/2019	2.2	110	ND (0.2)	ND (1.0)	24	ND (20)	ND (0.5)	4.4	0.41	8.2	1.6	880	ND (5.0)
C-TAZ-D	C-TAZ-D-Q219	N		GW	6/18/2019	2.3	110	ND (0.2)	ND (1.0)	32	ND (20)	ND (0.5)	4.4	0.37	8.1	1.3	870	ND (5.0)
C-TAZ-S	C-TAZ-S-Q219	N		GW	6/18/2019	2.2	110	ND (0.2)	ND (1.0)	20	29	ND (0.5)	4.3	0.39	8.2	1.4	880	ND (5.0)
R-19	R-19-Q219	N		GW	6/19/2019	2.1	100	ND (0.2)	ND (1.0)	27	24	ND (0.5)	4.2	0.34	8.2	1.5	920	ND (5.0)
R-19	MW-918-Q219	FD	R-19-Q219	GW	6/19/2019	2.2	100	ND (0.2)	ND (1.0)	31	ND (20)	ND (0.5)	4.1	0.37	8.2	1.6	920	ND (5.0)
R-28	R-28-Q219	N		GW	6/18/2019	2.2	110	ND (0.2)	ND (1.0)	51	ND (20)	ND (0.5)	4.3	0.38	8.2	1.4	870	ND (5.0)
R63	R63-Q219	N		GW	6/18/2019	2.4	110	ND (0.2)	ND (1.0)	21	ND (20)	ND (0.5)	4.4	0.35	8.2	1.6	860	ND (5.0)
RRB	RRB-Q219	N		GW	6/19/2019	2.3	100	ND (0.2)	ND (1.0)	50	ND (20)	ND (0.5)	4.3	0.35	8.2	1.7	920	ND (5.0)
SW1	SW1-Q219	N		GW	6/18/2019			ND (0.2)	ND (1.0)						7.3		950	
SW2	SW2-Q219	N		GW	6/18/2019			ND (0.2)	ND (1.0)						7.2		940	

			Design & Consultancy				ASSET/	ASSET/							
	RCAD		Design & Consultancy for natural and built assets		Lab	ASSET	BC Labs	BC Labs	BCLabs	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET
			built assets			Alkalinity, total		Aluminum,	Ammonia as		Antimony,		Arsenic,		Barium,
					Description	as CaCO3	Aluminum	dissolved	nitrogen	Antimony	dissolved	Arsenic	dissolved	Barium	dissolved
TMP 2019-05 Ba	iseline Sampling				Method	SM 2320 B	SW 6010B	SW 6010B	SM 4500-NH3 G	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020
					Units	mg/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
		Sample			Date										
Location ID	Sample ID	Туре	Parent Sample	Matrix	Sampled										
MW-10D	MW-10D-0519	N		GW	5/17/2019	130	270	ND (50)	ND (0.2)	ND (0.5)	ND (0.5)	1.1	1	120	53
MW-B-117	MW-B-117-0519	N		GW	5/15/2019	78	190	ND (50)	ND (0.2)	ND (0.5)	ND (0.5)	1.3	1.3	110	110
MW-B-33	MW-B-33-0519	N		GW	5/15/2019	110	520	270	ND (0.2)	ND (0.5)	ND (0.5)	3.6	3.4	85	88
MW-E-142	MW-E-142-0519	N		GW	5/15/2019	97	320	ND (50)	ND (0.2)	ND (0.5)	ND (0.5)	4	3.9	38	33
MW-E-72	MW-E-72-0519	N		GW	5/15/2019	110	1,100	ND (50)	ND (0.2)	ND (0.5)	ND (0.5)	1.6	1.3	53	34
MW-F-104	MW-F-104-0519	N		GW	5/15/2019	130	1,500	480	ND (0.2)	ND (0.5)	ND (0.5)	5.4	4.9	110	97
MW-F-60	MW-F-60-3V-0519	N		GW	5/15/2019	91	260	ND (50)	ND (0.2)	ND (0.5)	ND (0.5)	1.9	2	110	110
MW-F-60	MW-F-60-LF-0519	N		GW	5/15/2019	91	930	ND (50)	0.21	ND (0.5)	ND (0.5)	2.2	1.9	130	110
MW-G-57	MW-G-57-0519	N		GW	5/13/2019	97	270 J	ND (50)	ND (0.2)	ND (0.5)	ND (0.5)	3.4	3.5	46	47
MW-G-57	MW-919-Q219	FD	MW-G-57-0519	GW	5/13/2019	97	73 J	ND (50)	ND (0.2)	ND (0.5)	ND (0.5)	3.3	3.4	44	45
MW-G-82	MW-G-82-0519	N		GW	5/15/2019	93	140	ND (50)	ND (0.2)	ND (0.5)	ND (0.5)	3.6	3.2	61	45
MW-L-180	MW-L-180-0519	N		GW	5/14/2019	41	930	ND (250)	ND (0.2)	ND (0.5)	ND (0.5)	3.2	2.7	58	55
MW-L-225	MW-L-225-0519	N		GW	5/14/2019	36	2,000	ND (250)	ND (0.2)	ND (0.5)	ND (0.5)	5.7	4.5	65	49
MW-L-245	MW-L-245-0519	N		GW	5/14/2019	34	500	ND (1,000)	ND (0.2)	ND (0.5)	ND (0.5)	5.2	5	160	160
MW-L-90	MW-L-90-0519	N		GW	5/14/2019	95	260	ND (50)	ND (0.2)	ND (0.5)	ND (0.5)	0.73	0.66	73	76
MW-N-129	MW-N-129-0519	N		GW	5/13/2019	120	150	200	ND (0.2)	ND (0.5)	ND (0.5)	1.1	1	63	60
MW-N-217	MW-N-217-0519	N		GW	5/13/2019	29	400	230	ND (0.2)	ND (0.5)	ND (0.5)	4.3	3.8	56	54
MW-N-237	MW-N-237-0519	N		GW	5/13/2019	44	1,500	240	ND (0.2)	ND (0.5)	ND (0.5)	5	4.4	150	130
MW-N-237	MW-920-Q219	FD	MW-N-237-0519	GW	5/13/2019	45	880	240	ND (0.2)	ND (0.5)	ND (0.5)	4.6	4.5	130	130
MW-U-183	MW-U-183-0519	N		GW	5/22/2019	58	1,100	ND (100)	ND (0.2)	ND (0.5)	ND (0.5)	1.3	1.2	190	170
MW-U-273	MW-U-273-0519	N		GW	5/22/2019	64	1,600	ND (100)	ND (0.2)	ND (0.5)	ND (0.5)	4.4	4.4	72	57
MW-W-31	MW-W-31-0519	N		GW	5/23/2019	790	ND (500)	3,600	9.4	ND (2.5)	ND (2.5)	9.1	5.1	220	130

A	RCAD	IS	Design & Consultancy for natural and built assets		Lab	ASSET	ASSET Beryllium,	ASSET	ASSET/ BC Labs	ASSET	ASSET	ASSET Cadmium,	ASSET/ BC Labs	ASSET/ BC Labs Calcium,	ASSET
					Description	Beryllium	dissolved	Boron	Boron, dissolved	Bromide	Cadmium	dissolved	Calcium	dissolved	Chloride
TMP 2019-05 Ba	seline Sampling				Method	SW 6020	SW 6020	SW 6010B	SW 6010B	EPA 300.0	SW 6020	SW 6020	SW 6010B	SW 6010B	EPA 300.0
					Units	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	mg/L
		Sample			Date										
Location ID	Sample ID	Туре	Parent Sample	Matrix	Sampled										
MW-10D	MW-10D-0519	N		GW	5/17/2019	ND (0.5)	ND (0.5)	1,300	1,200	ND (2.5)	ND (0.5)	ND (0.5)	150,000	150,000	990
MW-B-117	MW-B-117-0519	N		GW	5/15/2019	ND (5.0)	ND (5.0)	930	890	ND (2.5)	ND (0.5)	ND (0.5)	240,000	230,000	3,200
MW-B-33	MW-B-33-0519	N		GW	5/15/2019	ND (0.5)	ND (5.0)	720	690	ND (1.0)	ND (0.5)	ND (0.5)	140,000	150,000	1,300
MW-E-142	MW-E-142-0519	N		GW	5/15/2019	ND (25)	ND (25)	2,400	2,400	ND (2.5)	ND (0.5)	ND (0.5)	350,000	350,000	3,600
MW-E-72	MW-E-72-0519	N		GW	5/15/2019	ND (0.5)	ND (0.5)	780	730	ND (1.0)	ND (0.5)	ND (0.5)	140,000	120,000	490
MW-F-104	MW-F-104-0519	N		GW	5/15/2019	ND (2.5)	ND (2.5)	1,800	1,800	1.4	ND (0.5)	ND (0.5)	170,000	170,000	2,000
MW-F-60	MW-F-60-3V-0519	N		GW	5/15/2019	ND (0.5)	ND (0.5)	690	670	ND (2.5)	ND (0.5)	ND (0.5)	180,000	170,000	690
MW-F-60	MW-F-60-LF-0519	N		GW	5/15/2019	ND (0.5)	ND (0.5)	700	690	ND (2.5)	ND (0.5)	ND (0.5)	180,000	170,000	690
MW-G-57	MW-G-57-0519	N		GW	5/13/2019	ND (12)	ND (12)	1,100 J	1,100 J	ND (2.5)	ND (0.5)	ND (0.5)	280,000 J	270,000 J	2,600
MW-G-57	MW-919-Q219	FD	MW-G-57-0519	GW	5/13/2019	ND (12)	ND (12)	1,200	1,200	ND (2.5)	ND (0.5)	ND (0.5)	290,000	280,000	2,600
MW-G-82	MW-G-82-0519	N		GW	5/15/2019	ND (12)	ND (12)	1,200	1,200	ND (2.5)	ND (0.5)	ND (0.5)	300,000	290,000	2,700
MW-L-180	MW-L-180-0519	N		GW	5/14/2019	ND (2.5)	ND (2.5)	1,600	1,300	ND (2.5)	ND (0.5)	ND (0.5)	310,000	270,000	3,700
MW-L-225	MW-L-225-0519	N		GW	5/14/2019	ND (2.5)	ND (2.5)	2,200	1,800	ND (2.5)	ND (0.5)	ND (0.5)	430,000	390,000	5,600
MW-L-245	MW-L-245-0519	N		GW	5/14/2019	ND (2.5)	ND (2.5)	2,600	2,800	ND (2.5)	ND (0.5)	ND (0.5)	440,000	400,000	6,800
MW-L-90	MW-L-90-0519	N		GW	5/14/2019	ND (0.5)	ND (0.5)	430	300	ND (2.5)	ND (0.5)	ND (0.5)	180,000	150,000	560
MW-N-129	MW-N-129-0519	N		GW	5/13/2019	ND (0.5)	ND (0.5)	520	510	ND (1.0)	ND (0.5)	ND (0.5)	120,000	120,000	370
MW-N-217	MW-N-217-0519	N		GW	5/13/2019	ND (2.5)	ND (2.5)	2,100	2,100	ND (2.5)	ND (0.5)	ND (0.5)	270,000	260,000	3,700
MW-N-237	MW-N-237-0519	N		GW	5/13/2019	ND (2.5)	ND (12)	2,400	2,400	ND (2.5)	ND (0.5)	ND (0.5)	550,000	580,000	6,500
MW-N-237	MW-920-Q219	FD	MW-N-237-0519	GW	5/13/2019	ND (2.5)	ND (12)	2,500	2,300	ND (2.5)	ND (0.5)	ND (0.5)	560,000	530,000	6,400
MW-U-183	MW-U-183-0519	N		GW	5/22/2019	ND (0.5)	ND (0.5)	810	740	ND (2.5)	ND (0.5)	ND (0.5)	420,000	370,000	2,100
MW-U-273	MW-U-273-0519	N		GW	5/22/2019	ND (2.5)	ND (2.5)	1,300	1,200	ND (1.0)	ND (0.5)	ND (0.5)	160,000	140,000	2,100
MW-W-31	MW-W-31-0519	N		GW	5/23/2019	ND (2.5)	ND (2.5)	1,900	1,500	ND (2.5)	ND (2.5)	ND (2.5)	420,000	400,000	4,100

<b>9</b> A	RCAD	IS	Design & Consultancy for natural and built assets		Lab	ASSET Chromium,	ASSET	ASSET Chromium, total	ASSET	ASSET	ASSET	ASSET Copper,	ASSET	ASSET/ BC Labs	ASSET/ BC Labs
					Description	Hexavalent	Chromium, total	dissolved	Cobalt	Cobalt, dissolved	Copper	dissolved	Fluoride	Iron	Iron, dissolved
TMP 2019-05 Ba	aseline Sampling				Method	EPA 218.6	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020	EPA 300.0	SW 6010B	SW 6010B
					Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L
		Sample			Date										
Location ID	Sample ID	Туре	Parent Sample	Matrix	Sampled										
MW-10D	MW-10D-0519	N		GW	5/17/2019	130	150	ND (1.0)	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	1.2	380	ND (50)
MW-B-117	MW-B-117-0519	N		GW	5/15/2019	0.4	4.4	ND (1.0)	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	3.1	200	99
MW-B-33	MW-B-33-0519	N		GW	5/15/2019	5.7	9.5	6.9	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	2.4	570	150
MW-E-142	MW-E-142-0519	N		GW	5/15/2019	6,900	7,300	7,700	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	2.7	330	ND (20)
MW-E-72	MW-E-72-0519	N		GW	5/15/2019	3,600	4,000	4,100	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	1.4	850	ND (20)
MW-F-104	MW-F-104-0519	N		GW	5/15/2019	2,600	3,400	3,000	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	1.9	1,200	97
MW-F-60	MW-F-60-3V-0519	N		GW	5/15/2019	1,600	1,700	1,600	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	0.97	200	26
MW-F-60	MW-F-60-LF-0519	N		GW	5/15/2019	1,300	1,400	1,400	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	1	950	ND (20)
MW-G-57	MW-G-57-0519	N		GW	5/13/2019	2,000	2,100	2,100	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	2.2	ND (20)	ND (20)
MW-G-57	MW-919-Q219	FD	MW-G-57-0519	GW	5/13/2019	2,000	2,200	2,000	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	2.1	ND (20)	ND (20)
MW-G-82	MW-G-82-0519	N		GW	5/15/2019	2,000	2,700	2,000	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	2.1	120	ND (20)
MW-L-180	MW-L-180-0519	N		GW	5/14/2019	ND (1.0)	3.8	ND (1.0)	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	4.4	1,300	ND (250)
MW-L-225	MW-L-225-0519	N		GW	5/14/2019	530	580	580	0.89	ND (0.5)	1.1	ND (1.0)	4.3	4,300	ND (250)
MW-L-245	MW-L-245-0519	N		GW	5/14/2019	ND (1.0)	3.7	ND (1.0)	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	4.3	ND (500)	ND (1,000)
MW-L-90	MW-L-90-0519	N		GW	5/14/2019	28	29	28	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	1.4	410	ND (50)
MW-N-129	MW-N-129-0519	N		GW	5/13/2019	130	140	140	ND (0.5)	ND (0.5)	ND (1.0)	1.2	0.58	130	ND (20)
MW-N-217	MW-N-217-0519	N		GW	5/13/2019	150	200	150	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	4.6	630	67
MW-N-237	MW-N-237-0519	N		GW	5/13/2019	1,600	1,600	1,500	0.52	ND (0.5)	ND (1.0)	ND (1.0)	4.5	1,500	55
MW-N-237	MW-920-Q219	FD	MW-N-237-0519	GW	5/13/2019	1,600	1,600	1,600	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	4.5	840	ND (20)
MW-U-183	MW-U-183-0519	N		GW	5/22/2019	ND (0.2)	4.1	ND (1.0)	0.64	ND (0.5)	ND (1.0)	ND (1.0)	3	1,500	ND (100)
MW-U-273	MW-U-273-0519	N		GW	5/22/2019	0.25	4.3	ND (1.0)	0.6	ND (0.5)	ND (1.0 J)	ND (1.0)	4.6	2,100	ND (100)
MW-W-31	MW-W-31-0519	N		GW	5/23/2019	ND (1.0)	61	ND (5.0)	3.5	ND (2.5)	ND (5.0)	ND (5.0)	1.7	13,000	18,000

SA	RCAD	IS	Design & Consultancy for natural and built assets		Lab	ASSET	ASSET	ASSET/ BC Labs	ASSET/ BC Labs	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET
, , , , , , , , , , , , , , , , , , ,			built assets		Description	Lead	Lead, dissolved	Magnesium	Magnesium, dissolved	Manganese	Manganese, dissolved	Mercury	Mercury, dissolved	Molybdenum	Molybdenum, dissolved
TMP 2019-05 Ba	seline Sampling				Method	SW 6020	SW 6020	SW 6010B	SW 6010B	SW 6020	SW 6020	EPA 7470A	EPA 7470A	SW 6020	SW 6020
					Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
		Sample			Date	<i>3,</i>	<i>J.</i>	<i>J</i> ,	<i>J</i> ,		<i>J,</i>				J.
Location ID	Sample ID	Туре	Parent Sample	Matrix	Sampled										'
MW-10D	MW-10D-0519	N		GW	5/17/2019	ND (1.0)	ND (1.0)	31,000	32,000	450	410	ND (0.2)	ND (0.2)	8.5	6.9
MW-B-117	MW-B-117-0519	N		GW	5/15/2019	ND (1.0)	ND (10)	31,000	35,000	1,100	1,100	ND (0.2)	ND (0.2)	47	46
MW-B-33	MW-B-33-0519	N		GW	5/15/2019	ND (1.0)	ND (1.0)	26,000	30,000	860	960	ND (0.2)	ND (0.2)	18	18
MW-E-142	MW-E-142-0519	N		GW	5/15/2019	ND (50)	ND (50)	14,000	15,000	44	40	ND (0.2)	ND (0.2)	21	21
MW-E-72	MW-E-72-0519	N		GW	5/15/2019	1.7	ND (1.0)	21,000	21,000	42	ND (0.5)	ND (0.2)	ND (0.2)	6	6.1
MW-F-104	MW-F-104-0519	N		GW	5/15/2019	3.1	ND (1.0)	15,000	15,000	280	280	ND (0.2)	ND (0.2)	32	31
MW-F-60	MW-F-60-3V-0519	N		GW	5/15/2019	ND (1.0)	ND (1.0)	31,000	32,000	340	350	ND (0.2)	ND (0.2)	18	19
MW-F-60	MW-F-60-LF-0519	N		GW	5/15/2019	ND (1.0)	ND (1.0)	31,000	32,000	390	360	ND (0.2)	ND (0.2)	20	19
MW-G-57	MW-G-57-0519	N		GW	5/13/2019	ND (1.0)	ND (1.0)	20,000	19,000 J	22	21	ND (0.2)	ND (0.2)	17	17
MW-G-57	MW-919-Q219	FD	MW-G-57-0519	GW	5/13/2019	ND (1.0)	ND (1.0)	20,000	20,000	21	21	ND (0.2)	ND (0.2)	17	17
MW-G-82	MW-G-82-0519	N		GW	5/15/2019	ND (1.0)	ND (1.0)	20,000	21,000	57	24	ND (0.2)	ND (0.2)	17	17
MW-L-180	MW-L-180-0519	N		GW	5/14/2019	ND (5.0)	ND (5.0)	23,000	20,000	40	33	ND (0.2)	ND (0.2)	35	34
MW-L-225	MW-L-225-0519	N		GW	5/14/2019	ND (5.0)	ND (5.0)	25,000	21,000	57	7	ND (0.2)	ND (0.2)	49	45
MW-L-245	MW-L-245-0519	N		GW	5/14/2019	ND (5.0)	ND (5.0)	11,000	9,900	30	23	ND (0.2)	ND (0.2)	63	64
MW-L-90	MW-L-90-0519	N		GW	5/14/2019	ND (1.0)	ND (1.0)	28,000	25,000	21	4.6	ND (0.2)	ND (0.2)	3.8	4
MW-N-129	MW-N-129-0519	N		GW	5/13/2019	ND (1.0)	ND (1.0)	22,000	24,000	8.8	7.5	ND (0.2)	ND (0.2)	3.3	3.3
MW-N-217	MW-N-217-0519	N		GW	5/13/2019	ND (5.0)	ND (5.0)	9,300	9,300	210	190	ND (0.2)	ND (0.2)	100	100
MW-N-237	MW-N-237-0519	N		GW	5/13/2019	ND (5.0)	ND (5.0)	14,000	14,000	470	440	ND (0.2)	ND (0.2)	69	72
MW-N-237	MW-920-Q219	FD	MW-N-237-0519	GW	5/13/2019	ND (5.0)	ND (5.0)	14,000	13,000	460	440	ND (0.2)	ND (0.2)	71	73
MW-U-183	MW-U-183-0519	N		GW	5/22/2019	ND (5.0)	ND (1.0)	68,000	60,000	720	710	ND (0.2)	ND (0.2)	16	16
MW-U-273	MW-U-273-0519	N		GW	5/22/2019	ND (5.0)	ND (5.0)	11,000	9,300	79	62	ND (0.2)	ND (0.2)	44	46
MW-W-31	MW-W-31-0519	N		GW	5/23/2019	8.6	ND (5.0)	270,000	240,000	880	420	ND (0.2)	ND (0.2)	24	14

$\triangle$	RCAD		Design & Consultancy for natural and		Lab	ASSET	ASSET	ASSET	ASSET/ BC Labs	ASSET	ASSET	ASSET	ASSET	ASSET/ BC Labs	ASSET
7 7			built assets					Nitrate/Nitrite as	Potassium,		Selenium,			Sodium,	
					Description	Nickel	Nickel, dissolved	Nitrogen	dissolved	Selenium	dissolved	Silver	Silver, dissolved	dissolved	Sulfate
TMP 2019-05 Ba	aseline Sampling				Method	SW 6020	SW 6020	SM 4500-NO3 F	SW 6010B	SW 6020	SW 6020	SW 6020	SW 6020	SW 6010B	EPA 300.0
	1		1		Units	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L
		Sample	1	1	Date										
Location ID	Sample ID	Туре	Parent Sample	Matrix	Sampled										
MW-10D	MW-10D-0519	N		GW	5/17/2019	3.5	ND (1.0)	11	14,000	7.5	ND (0.5)	ND (0.5)	ND (0.5)	610,000	370
MW-B-117	MW-B-117-0519	N		GW	5/15/2019	1	ND (1.0)	0.88	ND (500)	0.98	0.8	ND (0.5)	ND (0.5)	ND (500)	540
MW-B-33	MW-B-33-0519	N		GW	5/15/2019	ND (1.0)	ND (1.0)	0.86	ND (500)	0.92	0.73	ND (0.5)	ND (0.5)	ND (500)	220
MW-E-142	MW-E-142-0519	N		GW	5/15/2019	ND (1.0)	ND (1.0)	9.1	ND (500)	27	28	ND (0.5)	ND (0.5)	ND (500)	900
MW-E-72	MW-E-72-0519	N		GW	5/15/2019	1.1	ND (1.0)	12	ND (500)	9.4	10	ND (0.5)	ND (0.5)	ND (500)	310
MW-F-104	MW-F-104-0519	N		GW	5/15/2019	3.2	ND (1.0)	14	ND (500)	79	78	ND (0.5)	ND (0.5)	ND (500)	830
MW-F-60	MW-F-60-3V-0519	N		GW	5/15/2019	ND (1.0)	ND (1.0)	7.9	ND (500)	9.6	9.1	ND (0.5)	ND (0.5)	ND (500)	360
MW-F-60	MW-F-60-LF-0519	N		GW	5/15/2019	ND (1.0)	ND (1.0)	7.1	ND (500)	8.8	8.6	ND (0.5)	ND (0.5)	ND (500)	360
MW-G-57	MW-G-57-0519	N		GW	5/13/2019	ND (1.0)	ND (1.0)	9.3	ND (500)	9.7	11	ND (0.5)	ND (0.5)	ND (500)	520
MW-G-57	MW-919-Q219	FD	MW-G-57-0519	GW	5/13/2019	ND (1.0)	ND (1.0)	9.1	ND (500)	9.9	9.5	ND (0.5)	ND (0.5)	ND (500)	520
MW-G-82	MW-G-82-0519	N		GW	5/15/2019	2.4	ND (1.0)	9.1	ND (500)	9.5	9.6	ND (0.5)	ND (0.5)	ND (500)	520
MW-L-180	MW-L-180-0519	N		GW	5/14/2019	1.3	ND (1.0)	0.34	18,000	ND (2.5)	0.64	ND (0.5)	ND (0.5)	2,100,000	490
MW-L-225	MW-L-225-0519	N		GW	5/14/2019	3.3	ND (1.0)	0.69	25,000	ND (2.5)	0.59	ND (0.5)	ND (0.5)	3,000,000	710
MW-L-245	MW-L-245-0519	N		GW	5/14/2019	1.9	ND (1.0)	0.053	41,000	ND (0.5)	ND (2.5)	ND (0.5)	ND (2.5)	4,200,000	650
MW-L-90	MW-L-90-0519	N		GW	5/14/2019	ND (1.0)	ND (1.0)	4.2	9,800	3	3.1	ND (0.5)	ND (0.5)	240,000	160
MW-N-129	MW-N-129-0519	N		GW	5/13/2019	2.2	2.6	18	ND (500)	9.3	9.7	ND (0.5)	ND (0.5)	ND (500)	230
MW-N-217	MW-N-217-0519	N		GW	5/13/2019	1.6	1	6.3	ND (500)	5.9	5.8	ND (0.5)	ND (0.5)	ND (500)	1,000
MW-N-237	MW-N-237-0519	N		GW	5/13/2019	2.9	ND (1.0)	2.9	ND (500)	2.8	3.3	ND (2.5)	ND (2.5)	ND (500)	900
MW-N-237	MW-920-Q219	FD	MW-N-237-0519	GW	5/13/2019	1.9	ND (1.0)	3.1	ND (500)	2.7	2.6	ND (2.5)	ND (2.5)	ND (500)	920
MW-U-183	MW-U-183-0519	N		GW	5/22/2019	3.3	1.3	1.2	17,000	1.6	1.7	ND (0.5)	ND (0.5)	1,100,000	450
MW-U-273	MW-U-273-0519	N		GW	5/22/2019	2.5	ND (1.0)	2.4	17,000	3.4	3.6	ND (0.5)	ND (0.5)	1,400,000	470
MW-W-31	MW-W-31-0519	N		GW	5/23/2019	39	ND (5.0)	ND (0.05)	16,000	ND (2.5)	ND (2.5)	ND (2.5)	ND (2.5)	2,600,000	1,400

A	RCAD	IS	Design & Consultancy for natural and built assets		Lab	ASSET	ASSET Thallium,	ASSET Total dissolved	ASSET Total organic	ASSET	ASSET Vanadium,	ASSET	ASSET
TMD 2010 OF Do	salina Camanlina				Description Method	Thallium SW 6020	dissolved SW 6020	solids SM 2540 C	carbon SM 5310 C	Vanadium SW 6020	dissolved SW 6020	Zinc SW 6020	Zinc, dissolved SW 6020
TMP 2019-05 Ba	seline Sampling				Units					ug/L			ug/L
		Sample		1	Date	ug/L	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L
Location ID	Sample ID	Туре	Parent Sample	Matrix	Sampled								
MW-10D	MW-10D-0519	N	-	GW	5/17/2019	ND (0.5)	ND (0.5)	2,400	ND (1.0)	3.7	ND (1.0)	ND (10)	ND (10)
MW-B-117	MW-B-117-0519	N		GW	5/15/2019	ND (0.5)	ND (5.0)	5,700	ND (1.0)	ND (1.0)	ND (1.0)	ND (10)	ND (10)
MW-B-33	MW-B-33-0519	N		GW	5/15/2019	ND (0.5)	ND (0.5)	2,400	ND (1.0)	2.1	1	ND (10)	ND (10)
MW-E-142	MW-E-142-0519	N		GW	5/15/2019	ND (25)	ND (25)	6,300	ND (1.0)	2.3	1.8	ND (10)	ND (10)
MW-E-72	MW-E-72-0519	N		GW	5/15/2019	ND (0.5)	ND (0.5)	1,400	ND (1.0)	7.2	5.7	ND (10)	ND (10)
MW-F-104	MW-F-104-0519	N		GW	5/15/2019	ND (0.5)	ND (0.5)	4,500	ND (1.0)	5.4	3	ND (10)	ND (10)
MW-F-60	MW-F-60-3V-0519	N		GW	5/15/2019	ND (0.5)	ND (0.5)	1,800	ND (1.0)	2.1	1.8	ND (10)	ND (10)
MW-F-60	MW-F-60-LF-0519	N		GW	5/15/2019	ND (0.5)	ND (0.5)	1,700	ND (1.0)	2.9	1.5	ND (10)	ND (10)
MW-G-57	MW-G-57-0519	N		GW	5/13/2019	ND (0.5)	ND (0.5)	5,400	ND (1.0)	1.1	1.1	ND (10)	ND (10)
MW-G-57	MW-919-Q219	FD	MW-G-57-0519	GW	5/13/2019	ND (0.5)	ND (0.5)	5,200	ND (1.0)	1	1.1	ND (10)	ND (10)
MW-G-82	MW-G-82-0519	N		GW	5/15/2019	ND (0.5)	ND (0.5)	4,900	ND (1.0)	3.2	1.2	ND (10)	ND (10)
MW-L-180	MW-L-180-0519	N		GW	5/14/2019	ND (2.5)	ND (2.5)	6,400	ND (1.0)	8.1	6.2	ND (10)	ND (10)
MW-L-225	MW-L-225-0519	N		GW	5/14/2019	ND (2.5)	ND (2.5)	9,800	ND (1.0)	13	7	28	ND (10)
MW-L-245	MW-L-245-0519	N		GW	5/14/2019	ND (2.5)	ND (2.5)	11,000	ND (1.0)	2.6	1.5	39	ND (10)
MW-L-90	MW-L-90-0519	N		GW	5/14/2019	ND (0.5)	ND (0.5)	1,500	ND (10)	2.5	2.2	ND (10)	37
MW-N-129	MW-N-129-0519	N		GW	5/13/2019	ND (0.5)	ND (0.5)	1,200	ND (1.0)	6.7	6.5	ND (10)	ND (10)
MW-N-217	MW-N-217-0519	N		GW	5/13/2019	ND (2.5)	ND (2.5)	7,300	ND (1.0)	3.1	2.2	ND (10)	ND (10)
MW-N-237	MW-N-237-0519	N		GW	5/13/2019	ND (2.5)	ND (2.5)	11,000	ND (1.0)	3.8	1.4	ND (10)	ND (10)
MW-N-237	MW-920-Q219	FD	MW-N-237-0519	GW	5/13/2019	ND (2.5)	ND (2.5)	11,000	ND (1.0)	2.7	1.4	ND (10)	ND (10)
MW-U-183	MW-U-183-0519	N		GW	5/22/2019	ND (2.5)	ND (0.5)	4,600	ND (10 J)	2.8	1.3	ND (10)	ND (10)
MW-U-273	MW-U-273-0519	N		GW	5/22/2019	ND (2.5 J)	ND (2.5)	4,000	ND (1.0)	13	10	13 J	ND (10)
MW-W-31	MW-W-31-0519	N		GW	5/23/2019	ND (2.5)	ND (2.5)	7,600	1.1	15	ND (5.0)	ND (50)	ND (50)

A	RCAD	S Design for natu built as	& Consultancy ural and sets	Lab Description	ASSET Chromium, Hexavalent	ASSET Chromium, total dissolved
TMP 2019-05 Pos	t Development Sampling			Method Units	EPA 218.6 ug/L	SW 6020 ug/L
Location ID	Sample ID	Sample Type	Matrix	Date Sampled	<u> </u>	3.
MW-U-183	MW-U-183-050819	N	GW	5/8/2019	ND (0.2)	ND (1.0)
MW-U-273	MW-U-273-051019	N	GW	5/10/2019	ND (0.2)	ND (1.0)

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TMP 2019-06 Baseline Sampling

Design & Consultancy for natural and built assets

Lab ASSET ASSET ASSET **ASSET** Alkalinity, total Aluminum, Antimony Description as CaCO3 Aluminum dissolved SM 2320 B Method SW 6010B SW 6010B SW 6020

TMP 2019-06 Baseli	ine Sampling		Method				SW 6010B	SW 6010B	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020	SW 6010B
					Units	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
		Sample			Date												
Location ID	Sample ID	Туре	Parent Sample	Matrix	Sampled												
IRZ-20-SC-137-155	IRZ-20-SC-137-155	N		GW	6/30/2019	64	ND (50)	ND (50)	ND (0.5)	ND (0.5)	1.2	1	120	120	ND (0.5)	ND (0.5)	620
MW-L-180	MW-L-180-0619	N		GW	6/25/2019	41	100	ND (50)	ND (0.5)	ND (0.5)	3.1	3	53	50	ND (2.5)	ND (2.5)	1,300
MW-L-225	MW-L-225-0619	N		GW	6/25/2019	31	520	ND (50)	ND (0.5)	ND (0.5)	4.6	4.4	45	45	ND (2.5)	ND (2.5)	1,800
MW-L-90	MW-L-90-0619	N		GW	6/25/2019	97	540	ND (50 J)	ND (0.5)	ND (0.5)	0.87	0.72	69	66	ND (0.5)	ND (0.5)	290
MW-M-132	MW-M-132-0619	N		GW	6/25/2019	68	1,300	ND (50)	ND (0.5)	ND (0.5)	2.5	2	190	210	ND (2.5)	ND (2.5)	960
MW-M-193	MW-M-193-0619	N		GW	6/25/2019	50	1,600	72	ND (0.5)	ND (0.5)	2.7	2.5	120	130	ND (2.5)	ND (2.5)	1,500
MW-N-129	MW-N-129-0619	N		GW	6/25/2019	170	290	ND (50)	ND (0.5)	ND (0.5)	1.2	1.1	56	56	ND (0.5)	ND (0.5)	440
MW-N-129	MW-922-Q219	FD	MW-N-129-0619	GW	6/25/2019	160	290	ND (50)	ND (0.5)	ND (0.5)	1.2	1	56	56	ND (0.5)	ND (0.5)	450
MW-N-217	MW-N-217-0619	N		GW	6/25/2019	62	340	ND (50)	ND (0.5)	ND (0.5)	6.7	6.3	42	40	ND (2.5)	ND (2.5)	1,900
MW-N-237	MW-N-237-0619	N		GW	6/25/2019	46	420	ND (50)	ND (0.5)	ND (0.5)	4.9	4.6	98	85	ND (2.5)	ND (2.5)	2,100

ASSET

Arsenic

**ASSET** 

Antimony,

dissolved

ASSET

Arsenic,

dissolved

**ASSET** 

Barium

ASSET

Barium,

dissolved

ASSET

Beryllium

ASSET

Beryllium,

dissolved

ASSET

Boron

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Lab

Description

ASSET

Boron,

dissolved

ASSET

Bromide

					Description	aissoivea	Bromiae	Cadmium	aissoivea	Calcium	aissoivea	Cnioriae	Hexavalent	totai	aissoivea	Copait	aissoivea
TMP 2019-06 Baseli	ne Sampling				Method	SW 6010B	EPA 300.0	SW 6020	SW 6020	SW 6010B	SW 6010B	EPA 300.0	EPA 218.6	SW 6020	SW 6020	SW 6020	SW 6020
					Units	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L
		Sample			Date												
Location ID	Sample ID	Туре	<b>Parent Sample</b>	Matrix	Sampled												
IRZ-20-SC-137-155	IRZ-20-SC-137-155	N		GW	6/30/2019	630	ND (2.5)	ND (0.5)	ND (0.5)	320,000	320,000	2,300	240	250	230	ND (0.5)	ND (0.5)
MW-L-180	MW-L-180-0619	N		GW	6/25/2019	1,400	ND (2.5)	ND (0.5)	ND (0.5)	300,000	300,000	3,600	ND (1.0)	2.1	ND (1.0)	ND (0.5)	ND (0.5)
MW-L-225	MW-L-225-0619	N		GW	6/25/2019	1,800	ND (2.5)	ND (0.5)	ND (0.5)	440,000	420,000	5,300	490	470	470	ND (0.5)	ND (0.5)
MW-L-90	MW-L-90-0619	N		GW	6/25/2019	270 J	ND (2.5)	ND (0.5)	ND (0.5)	160,000	150,000	550	35	37	33	ND (0.5)	ND (0.5)
MW-M-132	MW-M-132-0619	N		GW	6/25/2019	960	ND (2.5)	ND (0.5)	ND (0.5)	280,000	270,000	2,700	ND (0.2)	2.9	ND (1.0)	ND (0.5)	ND (0.5)
MW-M-193	MW-M-193-0619	N		GW	6/25/2019	1,500	ND (2.5)	ND (0.5)	ND (0.5)	220,000	210,000	3,900	ND (1.0)	4.2	ND (1.0)	ND (0.5)	ND (0.5)
MW-N-129	MW-N-129-0619	N		GW	6/25/2019	430	ND (1.0)	ND (0.5)	ND (0.5)	120,000	120,000	380	140	130	130	ND (0.5)	ND (0.5)
MW-N-129	MW-922-Q219	FD	MW-N-129-0619	GW	6/25/2019	440	ND (2.5)	ND (0.5)	ND (0.5)	120,000	120,000	380	140	130	130	ND (0.5)	ND (0.5)
MW-N-217	MW-N-217-0619	N		GW	6/25/2019	1,900	ND (2.5)	ND (0.5)	ND (0.5)	250,000	220,000	3,800	870	900	900	ND (0.5)	ND (0.5)
MW-N-237	MW-N-237-0619	N		GW	6/25/2019	2,200	ND (2.5)	ND (0.5)	ND (0.5)	440,000	440,000	5,800	1,200	1,400	1,400	ND (0.5)	ND (0.5)

ASSET

Cadmium

ASSET

Cadmium,

dissolved

ASSET

Calcium

ASSET

Calcium,

dissolved

ASSET

Chloride

ASSET

Chromium,

Hexavalent

ASSET

Chromium,

total

ASSET

Chromium, total

dissolved

**ASSET** 

Cobalt

ASSET

Cobalt,

dissolved

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	TMP 2019-06 Baseline Sampling

Design & Consultancy for natural and built assets

Lab	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET	ASSET
		Copper,			Iron,		Lead,		Magnesium,		Manganese,	
Description	Copper	dissolved	Fluoride	Iron	dissolved	Lead	dissolved	Magnesium	dissolved	Manganese	dissolved	Mercury
Method	SW 6020	SW 6020	EPA 300.0	SW 6010B	SW 6010B	SW 6020	SW 6020	SW 6010B	SW 6010B	SW 6020	SW 6020	EPA 7470A
Units	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Date												

					Units	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
		Sample			Date												
Location ID	Sample ID	Туре	Parent Sample	Matrix	Sampled												
IRZ-20-SC-137-155	IRZ-20-SC-137-155	N		GW	6/30/2019	ND (1.0)	ND (1.0)	2.5	59	35	ND (1.0)	ND (1.0)	46,000	46,000	3.4	ND (0.5)	ND (0.2)
MW-L-180	MW-L-180-0619	N		GW	6/25/2019	ND (1.0)	ND (1.0)	4.5	150	22	ND (1.0)	ND (1.0)	18,000	18,000	ND (0.5)	ND (0.5)	ND (0.2)
MW-L-225	MW-L-225-0619	N		GW	6/25/2019	ND (1.0)	ND (1.0)	4.4	490	ND (20)	ND (1.0)	ND (1.0)	18,000	17,000	ND (0.5)	ND (0.5)	ND (0.2)
MW-L-90	MW-L-90-0619	N		GW	6/25/2019	ND (1.0)	ND (1.0)	1.4	660	ND (20)	ND (1.0)	ND (1.0)	27,000	25,000 J	22	ND (0.5)	ND (0.2)
MW-M-132	MW-M-132-0619	N		GW	6/25/2019	ND (1.0)	ND (1.0)	3.6	2,100	700	ND (1.0)	ND (1.0)	32,000	31,000	1,000	960	ND (0.2)
MW-M-193	MW-M-193-0619	N		GW	6/25/2019	ND (1.0)	ND (1.0)	4.3	2,000	310	ND (1.0)	ND (1.0)	12,000	11,000	440	390	ND (0.2)
MW-N-129	MW-N-129-0619	N		GW	6/25/2019	20 J	ND (1.0)	0.54	400 J	ND (20)	ND (1.0)	ND (1.0)	23,000	23,000	4.9 J	ND (0.5)	ND (0.2)
MW-N-129	MW-922-Q219	FD	MW-N-129-0619	GW	6/25/2019	ND (1.0 J)	ND (1.0)	0.58	290 J	ND (20)	ND (1.0)	ND (1.0)	24,000	24,000	1.1 J	ND (0.5)	ND (0.2)
MW-N-217	MW-N-217-0619	N		GW	6/25/2019	ND (1.0)	ND (1.0)	4.8	420	ND (20)	ND (1.0)	ND (1.0)	9,300	8,400	80	77	ND (0.2)
MW-N-237	MW-N-237-0619	N		GW	6/25/2019	ND (1.0)	ND (1.0)	4.7	580	ND (20)	ND (1.0)	ND (1.0)	12,000	12,000	290	250	ND (0.2)

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TMP 2019-06 Baseline Samplir

Design & Consultancy for natural and built assets

Lab

Description

ASSET

Mercury,

dissolved

ASSET

Molybdenum

TMP 2019-06 Baselii	ne Sampling				Method	EPA 7470A	SW 6020	SW 6020	SW 6020	SW 6020	SM 4500-NO3 F	SW 6010B	SW 6020	SW 6020	SW 6020	SW 6020	SW 6010B
					Units	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
		Sample			Date												
Location ID	Sample ID	Туре	Parent Sample	Matrix	Sampled												
IRZ-20-SC-137-155	IRZ-20-SC-137-155	N		GW	6/30/2019	ND (0.2)	16	15	53	51	2.5	13,000	1.6	1.5	ND (0.5)	ND (0.5)	1,300,000
MW-L-180	MW-L-180-0619	N		GW	6/25/2019	ND (0.2)	32	31	ND (1.0)	ND (1.0)	0.38	19,000	0.68	0.8	ND (0.5)	ND (0.5)	2,300,000
MW-L-225	MW-L-225-0619	N		GW	6/25/2019	ND (0.2)	45	47	ND (1.0)	ND (1.0)	0.55	26,000	0.66	0.68	ND (0.5)	ND (0.5)	4,000,000
MW-L-90	MW-L-90-0619	N		GW	6/25/2019	ND (0.2)	4	3.8	2.6	1.4	4	9,600	2.9	3	ND (0.5)	ND (0.5)	220,000
MW-M-132	MW-M-132-0619	N		GW	6/25/2019	ND (0.2)	22	21	ND (1.0)	ND (1.0)	0.11	19,000	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	1,700,000
MW-M-193	MW-M-193-0619	N		GW	6/25/2019	ND (0.2)	44	49	1.5	ND (1.0)	0.25	27,000	0.65	0.58	ND (0.5)	ND (0.5)	2,700,000
MW-N-129	MW-N-129-0619	N		GW	6/25/2019	ND (0.2)	3.6	3.6	7.7	6.1	16	8,200	8.6	9.6	ND (0.5)	ND (0.5)	270,000
MW-N-129	MW-922-Q219	FD	MW-N-129-0619	GW	6/25/2019	ND (0.2)	3.9	3.8	7.2	6	17	8,300	9.2	9.3	ND (0.5)	ND (0.5)	290,000
MW-N-217	MW-N-217-0619	N		GW	6/25/2019	ND (0.2)	97	93	ND (1.0)	ND (1.0)	6.7	26,000	6.5	6.5	ND (0.5)	ND (0.5)	2,700,000
MW-N-237	MW-N-237-0619	N		GW	6/25/2019	ND (0.2)	78	83	2.2	ND (1.0)	3.1	38,000	2.9	2.7	ND (0.5)	ND (0.5)	4,300,000

ASSET

Molybdenum,

dissolved

ASSET

Nickel

ASSET

Nickel,

dissolved

ASSET

Nitrate/Nitrite as

Nitrogen

ASSET

Potassium,

dissolved

**ASSET** 

Selenium

ASSET

Selenium,

dissolved

ASSET

Silver

**ASSET** 

Silver,

dissolved

ASSET

Sodium,

dissolved

9	<b>ARC</b>	DIS
7		

TMP 2019-06 Baseline Sampling

Design & Consultancy for natural and built assets Lab ASSET **ASSET** ASSET ASSET ASSET ASSET ASSET Thallium, Total dissolved Total organic TPH as motor Description Sulfate Thallium dissolved solids carbon TPH as diesel oil

**ASSET** 

Vanadium

ASSET

Vanadium,

dissolved

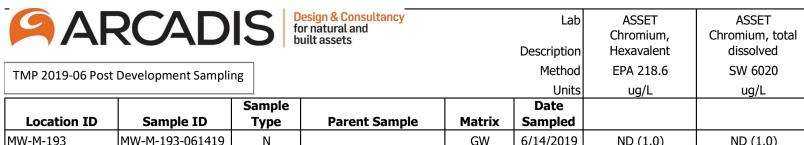
ASSET

Zinc

ASSET Zinc,

dissolved

TMP 2019-06 Basel	ine Sampling				Method	EPA 300.0	SW 6020	SW 6020	SM 2540 C	SM 5310 C	SW 8015B	SW 8015B	SW 6020	SW 6020	SW 6020	SW 6020
					Units	mg/L	ug/L	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
		Sample			Date											
Location ID	Sample ID	Туре	<b>Parent Sample</b>	Matrix	Sampled											
IRZ-20-SC-137-155	IRZ-20-SC-137-155	N		GW	6/30/2019	340	ND (0.5)	ND (0.5)	4,700	ND (1.0)	ND (54)	ND (54)	4.4	3.2	60	61
MW-L-180	MW-L-180-0619	N		GW	6/25/2019	490	ND (0.5)	ND (0.5)	7,100	ND (1.0)			7.4	6.8	ND (10)	ND (10)
MW-L-225	MW-L-225-0619	N		GW	6/25/2019	680	ND (0.5)	ND (0.5)	10,000	ND (1.0)			8.1	6.9	13	ND (10)
MW-L-90	MW-L-90-0619	N		GW	6/25/2019	160	ND (0.5)	ND (0.5)	1,400	ND (10)			3.2	2.5	ND (10)	ND (10)
MW-M-132	MW-M-132-0619	N		GW	6/25/2019	310	ND (0.5)	ND (0.5)	5,200	ND (1.0)			2.6	ND (1.0)	ND (10)	ND (10)
MW-M-193	MW-M-193-0619	N		GW	6/25/2019	460	ND (0.5)	ND (0.5)	8,800	ND (1.0)			4.8	2.2	ND (10)	ND (10)
MW-N-129	MW-N-129-0619	N		GW	6/25/2019	200	ND (0.5)	ND (0.5)	1,200	ND (10)			7.4	6.7	13	ND (10)
MW-N-129	MW-922-Q219	FD	MW-N-129-0619	GW	6/25/2019	200	ND (0.5)	ND (0.5)	1,200	ND (1.0)			7.2	6.9	ND (10)	ND (10)
MW-N-217	MW-N-217-0619	N		GW	6/25/2019	1,000	ND (0.5)	ND (0.5)	7,200	ND (1.0)			6.6	5.7	ND (10)	ND (10)
MW-N-237	MW-N-237-0619	N		GW	6/25/2019	890	ND (0.5)	ND (0.5)	11,000 J	ND (1.0)			4	2.9	ND (10)	ND (10)



		Sample			Date	- 5/	- 31
Location ID	Sample ID	Туре	Parent Sample	Matrix	Sampled		
MW-M-193	MW-M-193-061419	N		GW	6/14/2019	ND (1.0)	ND (1.0)
MW-M-132	MW-M-132-061519	N		GW	6/16/2019	ND (0.2)	ND (1.0)
MW-M-57	MW-M-57-061719	N		GW	6/17/2019	0.72	ND (1.0)
MW-M-95	MW-M-95-061619	N		GW	6/16/2019	ND (0.2)	ND (1.0)
MW-R-109	MW-R-109-062819	N		GW	6/28/2019	2.5	2.6